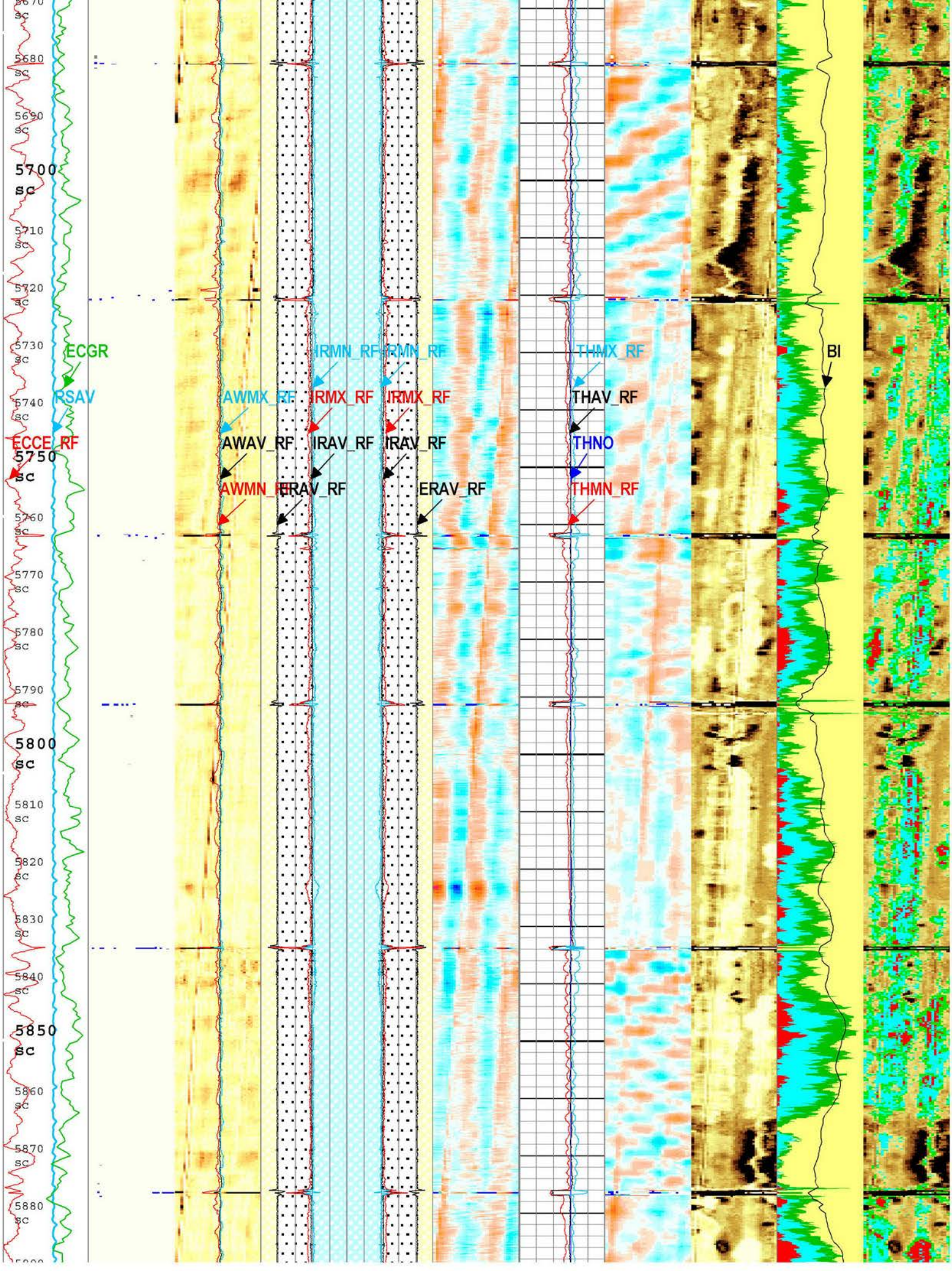
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RSAV
ECCE_RF
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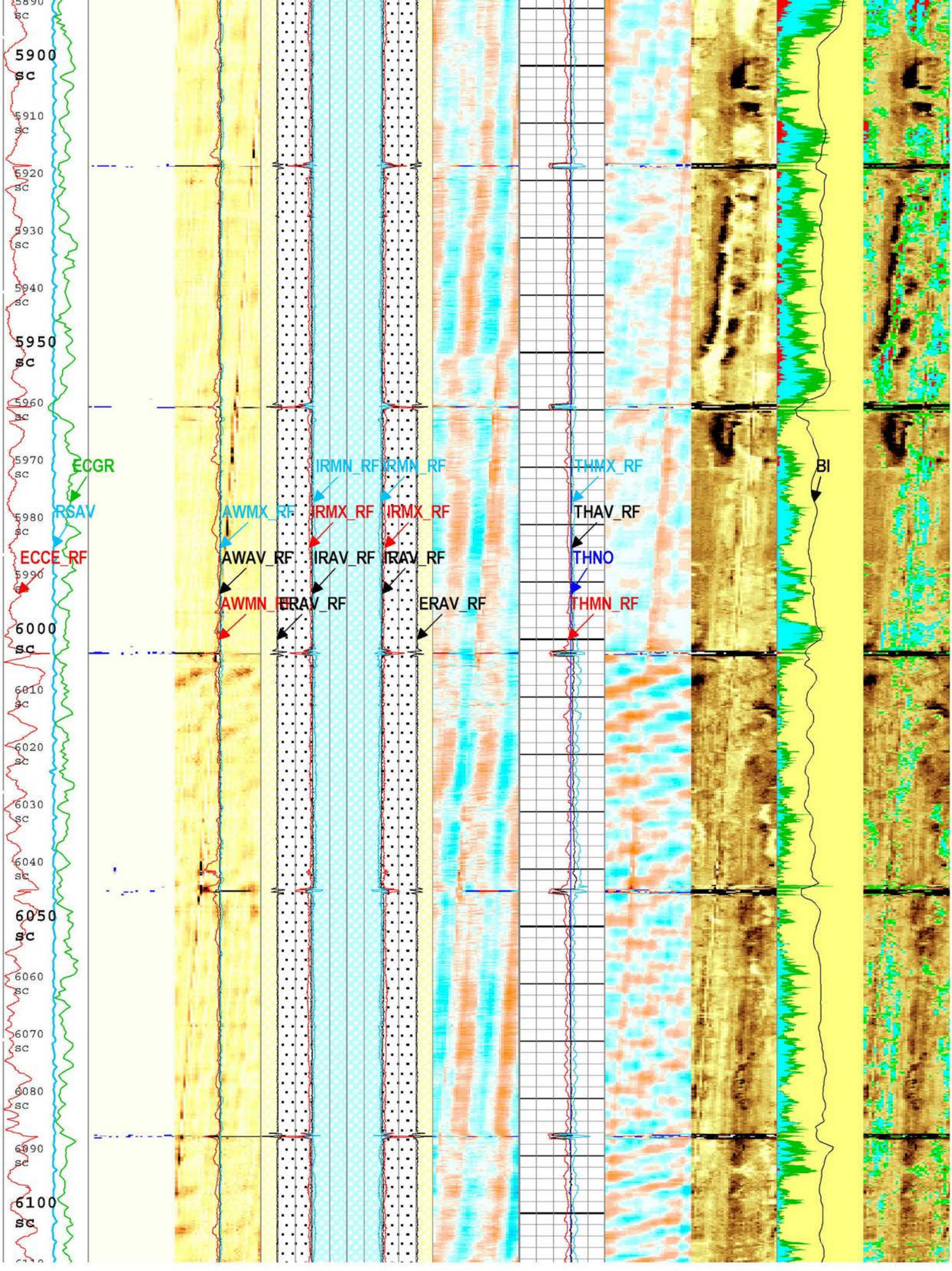
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI
5700 sc
5750 sc
5800 sc
5850 sc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5990 sc
6000 sc
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6030 sc
6040 sc
6050 sc
6060 sc
6070 sc
6080 sc
6090 sc
6100 sc
ECGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
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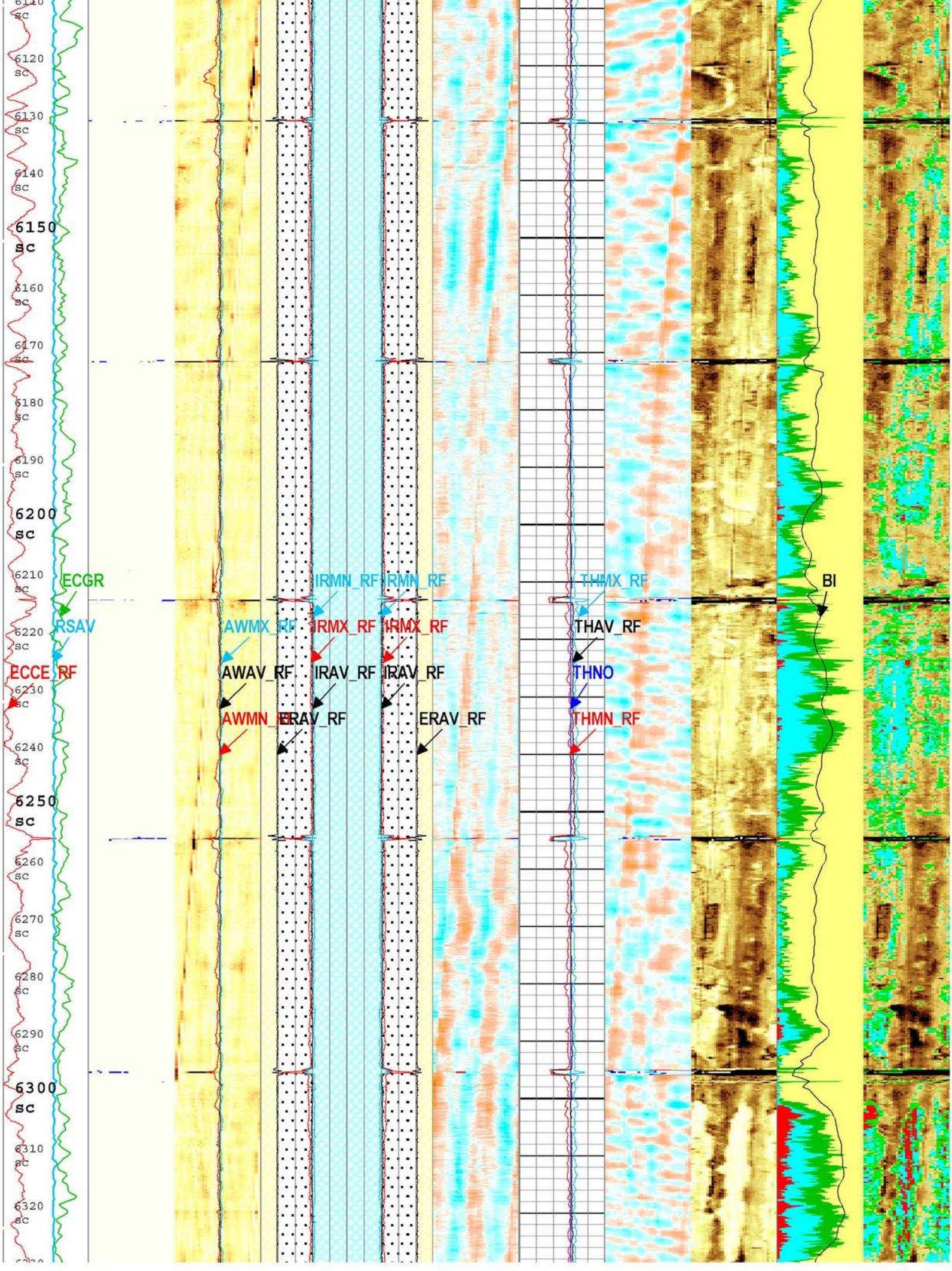
THMX_RF
THAV_RF
THNO
THMN_RF
BI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6180 sc
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6220 sc
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6240 sc
6250 sc
6260 sc
6270 sc
6280 sc
6290 sc
6300 sc
6310 sc
6320 sc
ECGR
RSAV
ECCE_RF
IRMN_RF
IRMN_RF
AWMX_RF
IRMX_RF
IRMX_RF
AWAV_RF
IRAV_RF
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AWMN_RF
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THMX_RF
THAV_RF
THNO
THMN_RF
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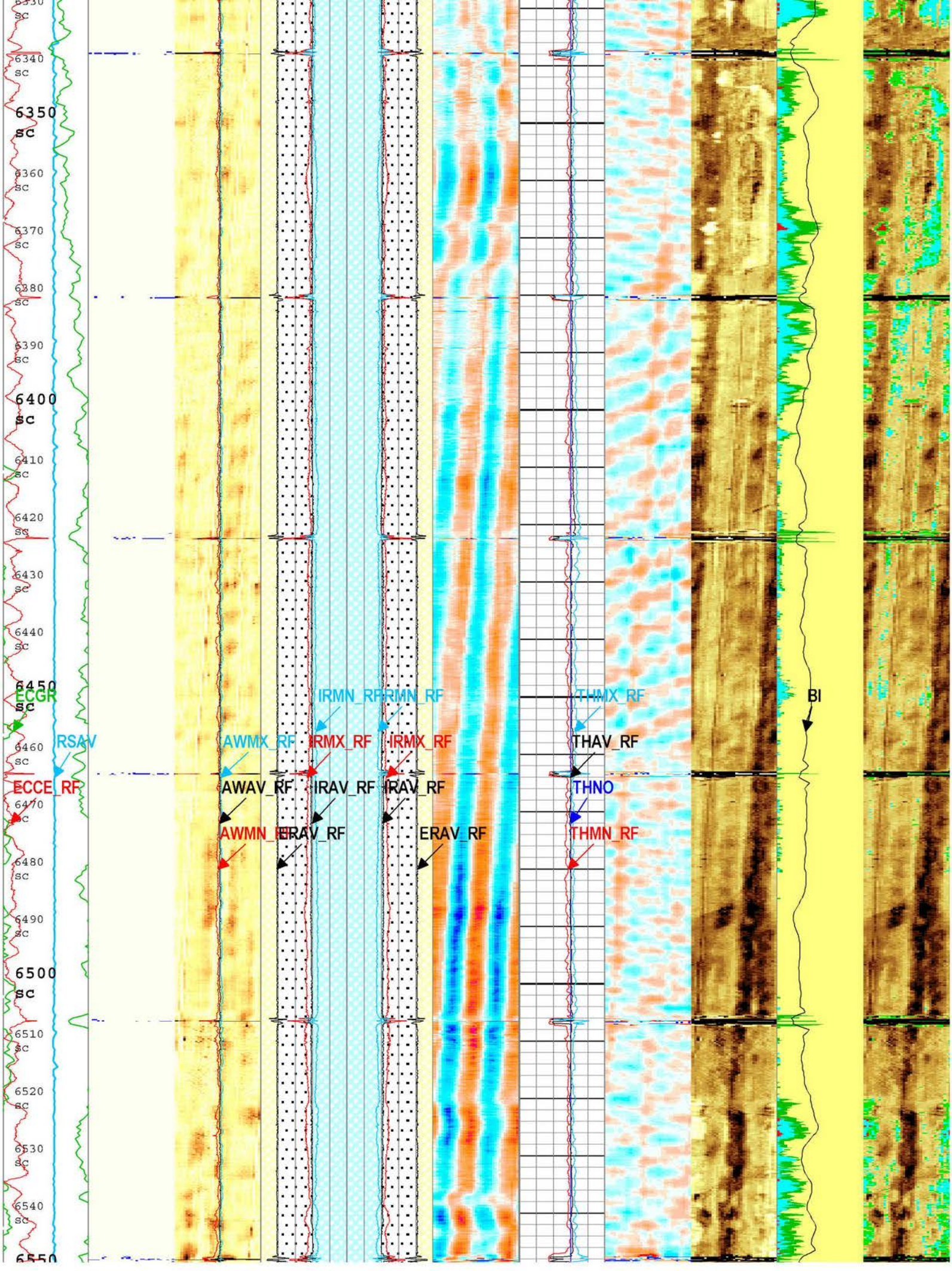
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6460 sc
6470 sc
6480 sc
6490 sc
6500 sc
6510 sc
6520 sc
6530 sc
6540 sc
6550
ECGR
RSAV
ECCE_RF
IRMN_RF
IRMN_RF
AWMX_RF
IRMX_RF
IRMX_RF
AWAV_RF
IRAV_RF
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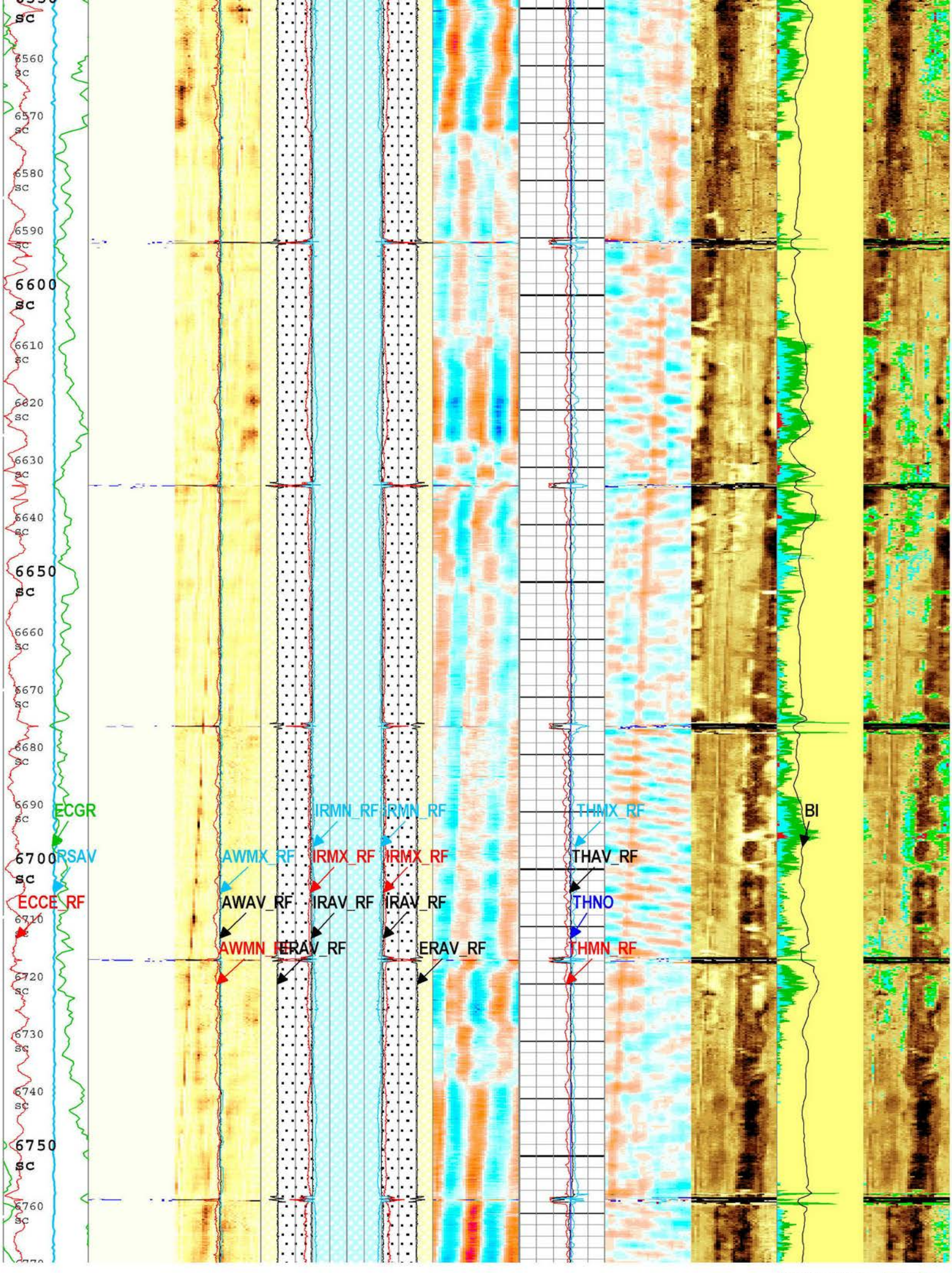
AWMN_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI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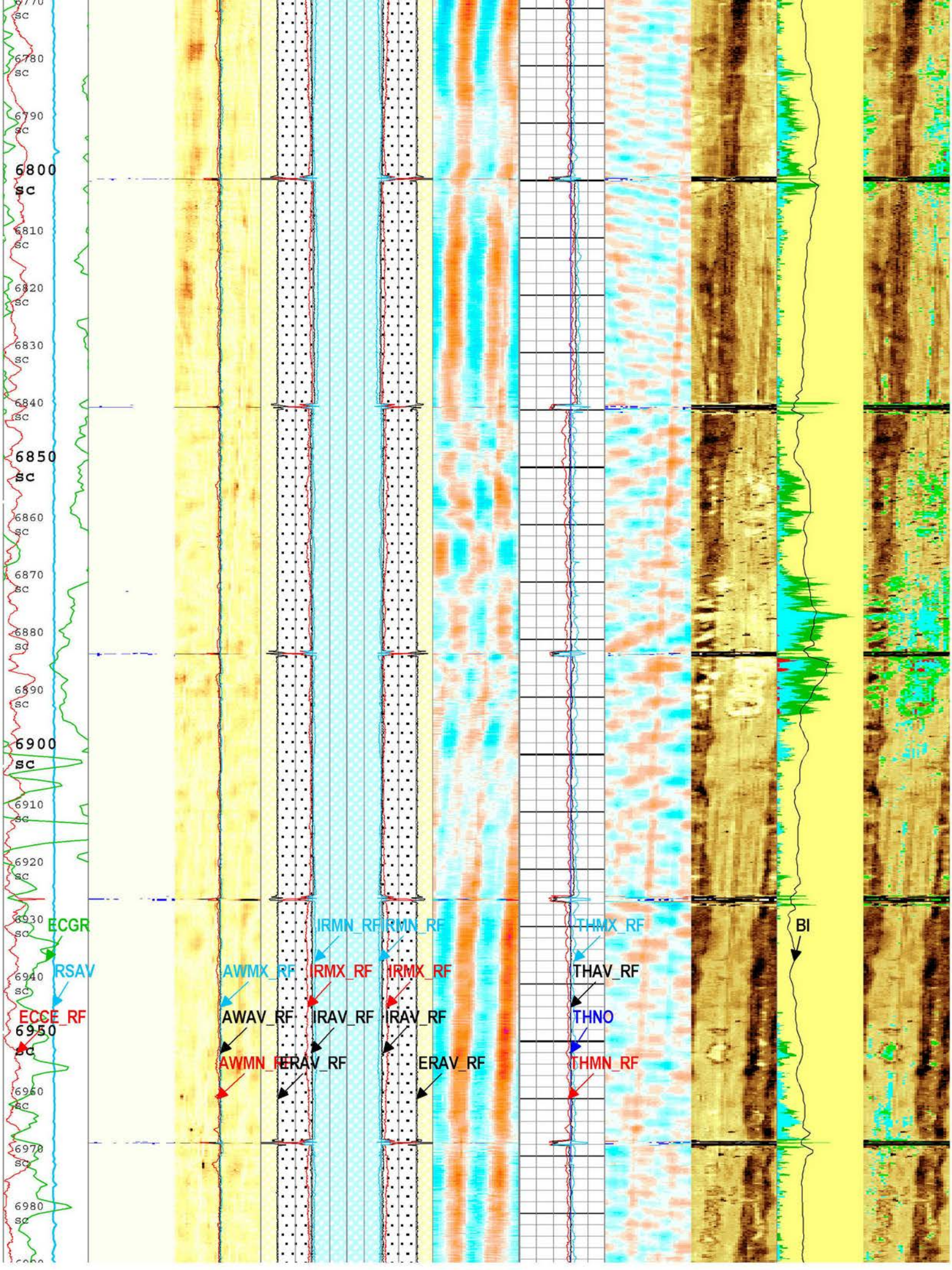
6730
6740
6750
6760
ECGR
RSAV
ECCE_RF
IRMN_RF
IRMN_RF
AWMX_RF
IRMX_RF
IRMX_RF
AWAV_RF
IRAV_RF
IRAV_RF
AWMN_RF
ERAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI


6770 sc
6780 sc
6790 sc
6800 sc
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6860 sc
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6880 sc
6890 sc
6900 sc
6910 sc
6920 sc
6930 sc
6940 sc
6950 sc
6960 sc
6970 sc
6980 sc
ECGR
RSAV
ECCE_RF
IRMN_RF
IRMN_RF
AWMX_RF
IRMX_RF
IRMX_RF
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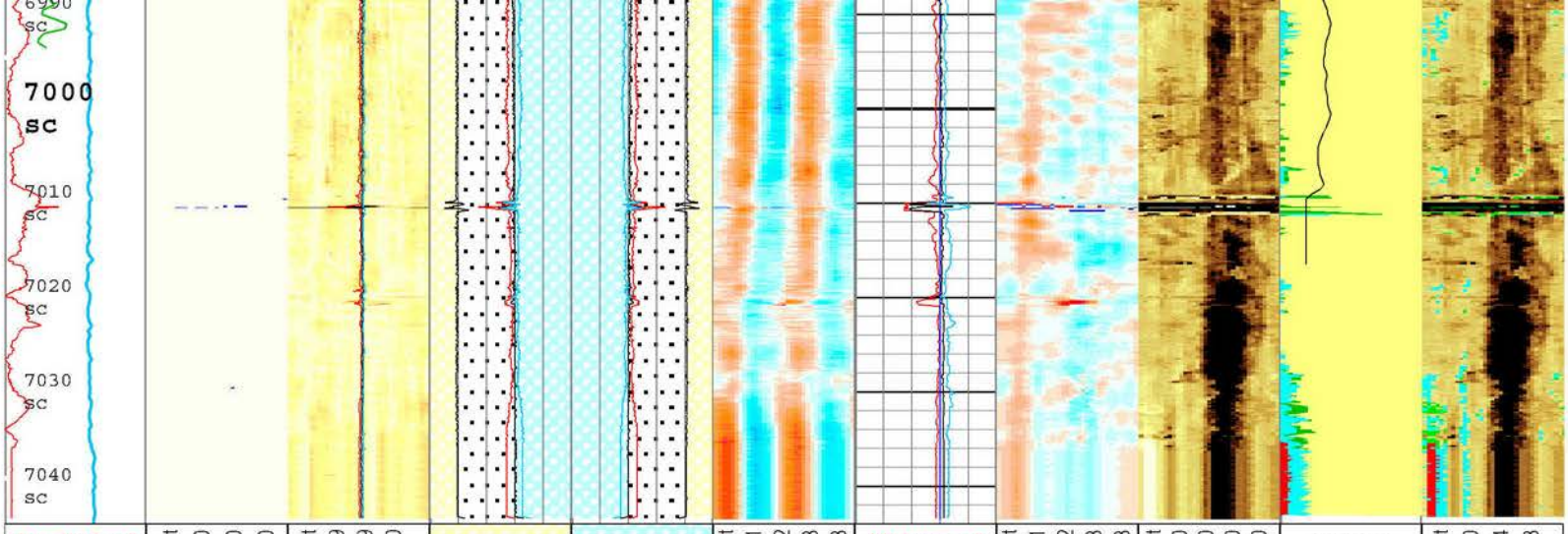
THMX_RF
THAV_RF
THNO
THMN_RF
BI



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

Gamma Ray (ECGR) HGNS-H
0 gAPI 150

Absent 1.500 2.500 6.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0]) USIT-E
1 6

Absent -4.799 -2.799 -0.800
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)

Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

Ratio of Cement Measurements to Total (CEMR) USIT-E
1 0

Micro-debonding Ratio (MDR) USIT-E
1 0

Ratio of Gas Measurements to Total (GASR) USIT-E
1 0

Bonded
Gas
Liquid
Micro-debonding

Bond Index (BI) DSLT-H
1 0

Absent 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

Absent 2.599 4.563 6.527
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)

TIME_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.44] - :
3 - UFLG 2 Value within [2.44 - 2.5] - :
4 - UFLG 3 Value within [2.5 - 3.5] - :

UTIM Error
Pulse Origin Not Detected
Spiky Waveform
WINLEN Error

5 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - : Casing Thickness Error

6 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - : Loop Processing Error

Description: USI Composite Format: Log (USI Composite_7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 17-Jul-2017 14:11:12

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	7331	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	55	mV
CDEN	Cement Density	HGNS-H	2.65	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.4	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	Depth Zoned	psi
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	193	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	0.89	
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	3.39	mV
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	10.78	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	24.96	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	1.69	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	1.69	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
NMSG	Near Minimum Sliding Gate	DSLT-H	310	us
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	65	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Centered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.68	Mrayl

ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	17.5	10	832
BS	11	832	7044
CYSTLGR	55000	10	5835
CYSTLGR	80000	5835	7044
MCI	21.68	10	830
MCI	12.98	830	7044

All depth are actual.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
EMXV	EMEX Voltage	USIT-E	80	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7030	ft
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	59.63	us
WINE	Window End Time	USIT-E	99.63	us

One

USIT Cement Log 2 IN = 100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	4.12 ft	7044.38 ft	02-Jun-2017 1:27:12 AM	02-Jun-2017 4:20:07 AM	ON	4.20 ft	Yes

All depths are referenced to toolstring zero

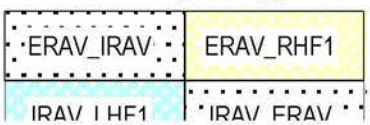
Log

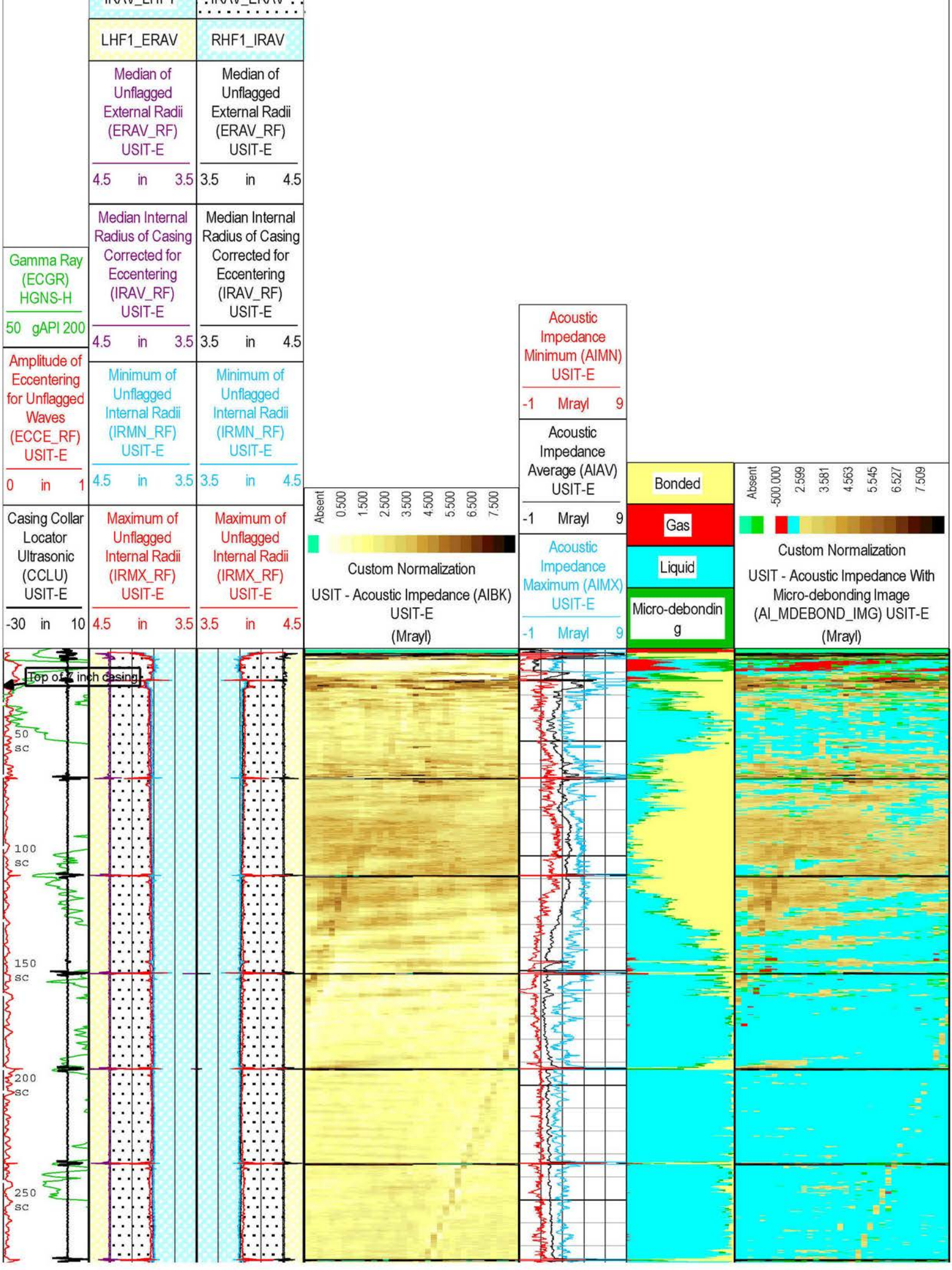
Company:Southern California Gas Company Well:Fernando Fee 35B

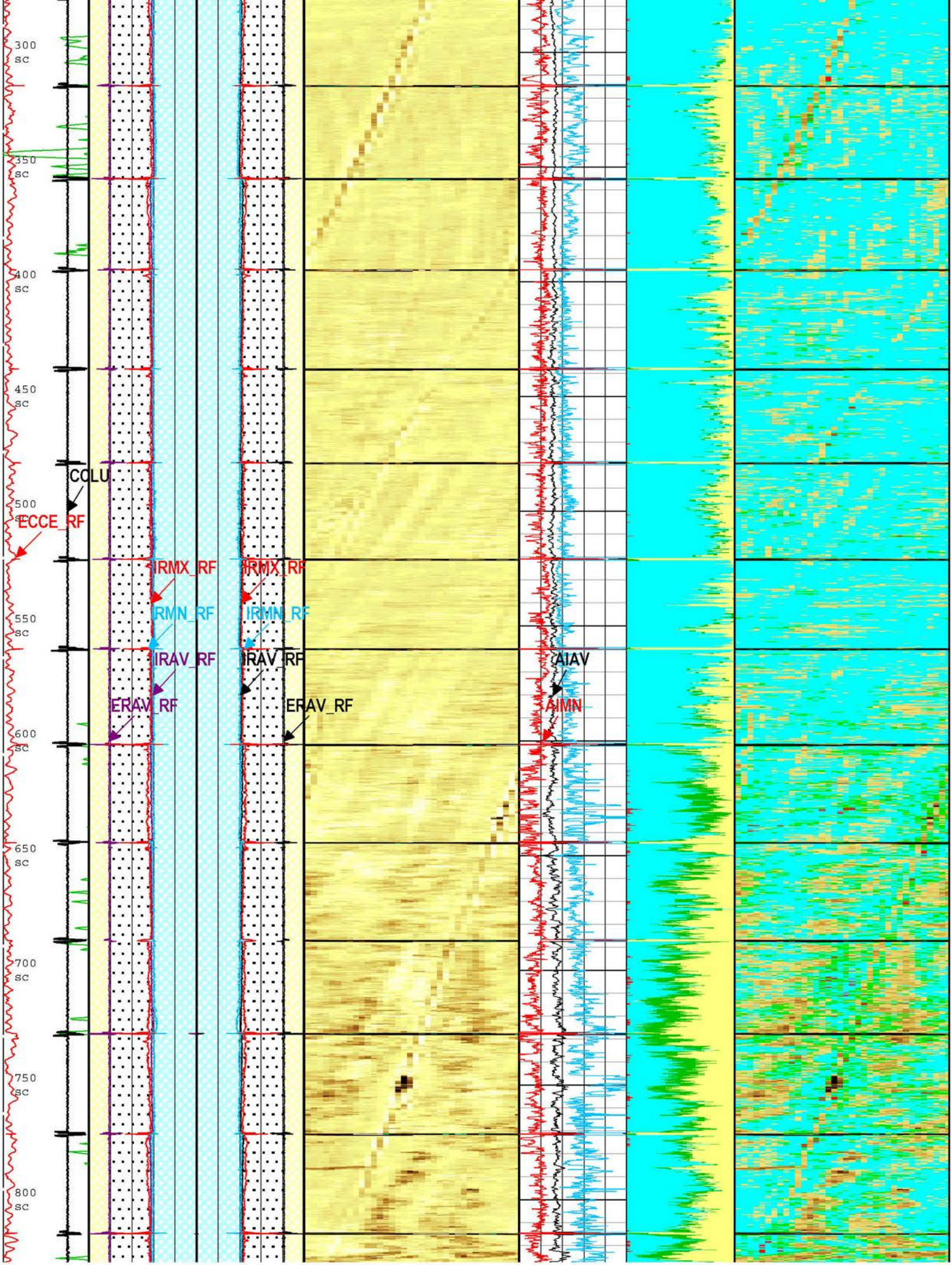
One: Log[4]:Up:S011

Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 17-Jul-2017 14:11:28

TIME_1900 - Time Marked every 60.00 (s)




LHF1_ERAV
RHF1_IRAV
Median of Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5
3.5 in 4.5
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5
3.5 in 4.5
Gamma Ray (ECGR) HGNS-H
50 gAPI 200
Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 1
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5
3.5 in 4.5
Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5
3.5 in 4.5
Top of 7 inch casing
50 sc
100 sc
150 sc
200 sc
250 sc
Absent 0.500 1.500 2.500 3.500 4.500 5.500 6.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)
Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9
Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9
Bonded
Gas
Liquid
Micro-debonding
Absent -500.000 2.599 3.581 4.563 5.545 6.527 7.509
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)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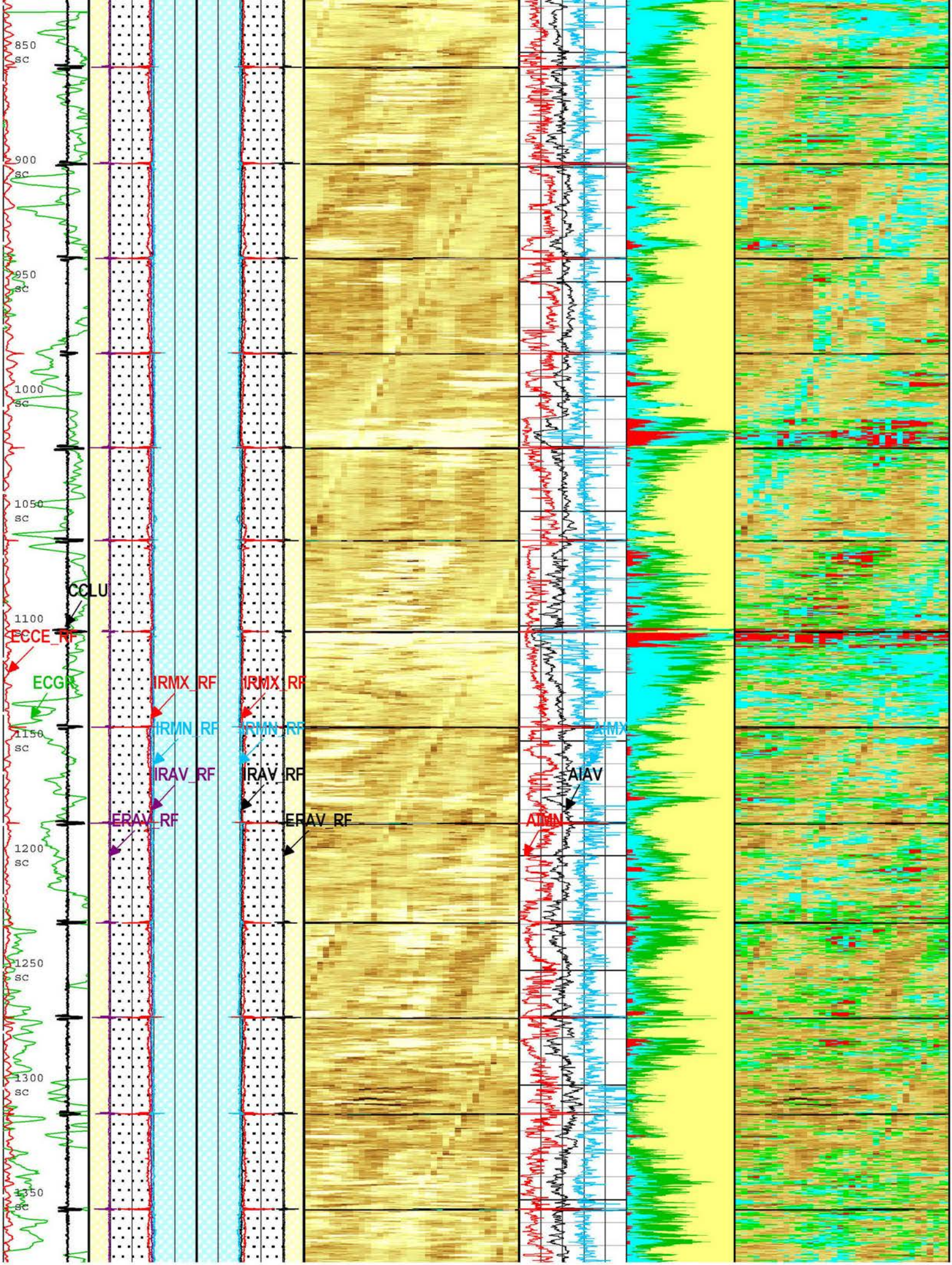
350 sc
400 sc
450 sc
500 sc
550 sc
600 sc
650 sc
700 sc
750 sc
800 sc
COLU
ECCE_RF
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIAV
AIMN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1000 sc
1050 sc
1100
1150 sc
1200 sc
1250 sc
1300 sc
1350 sc
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ECGR
IRMX_RF
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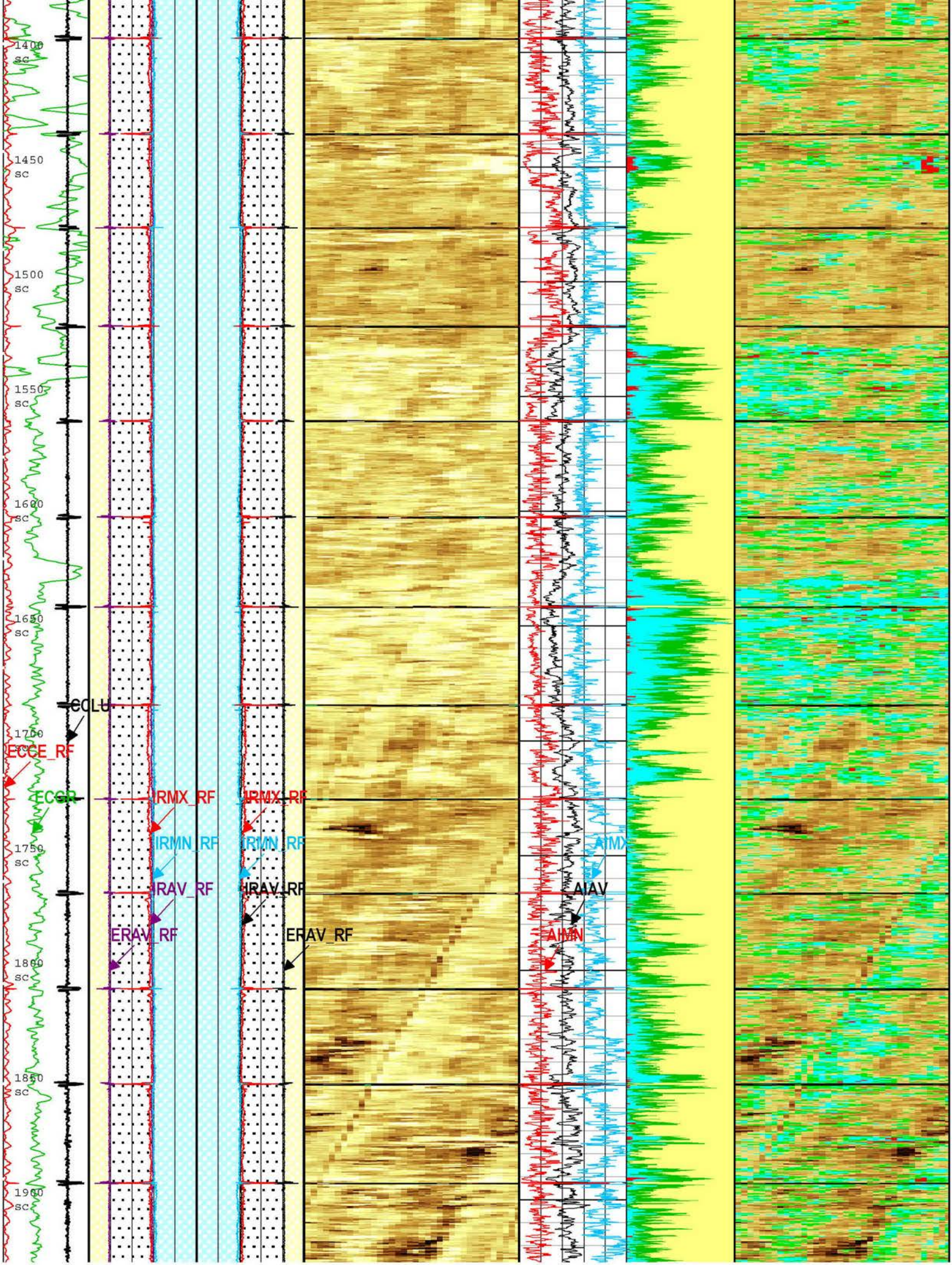
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIAV
AIMN


1400 sc
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ECLU
ECCE_RF
ECGR
IRMX_RF
IRMN_RF
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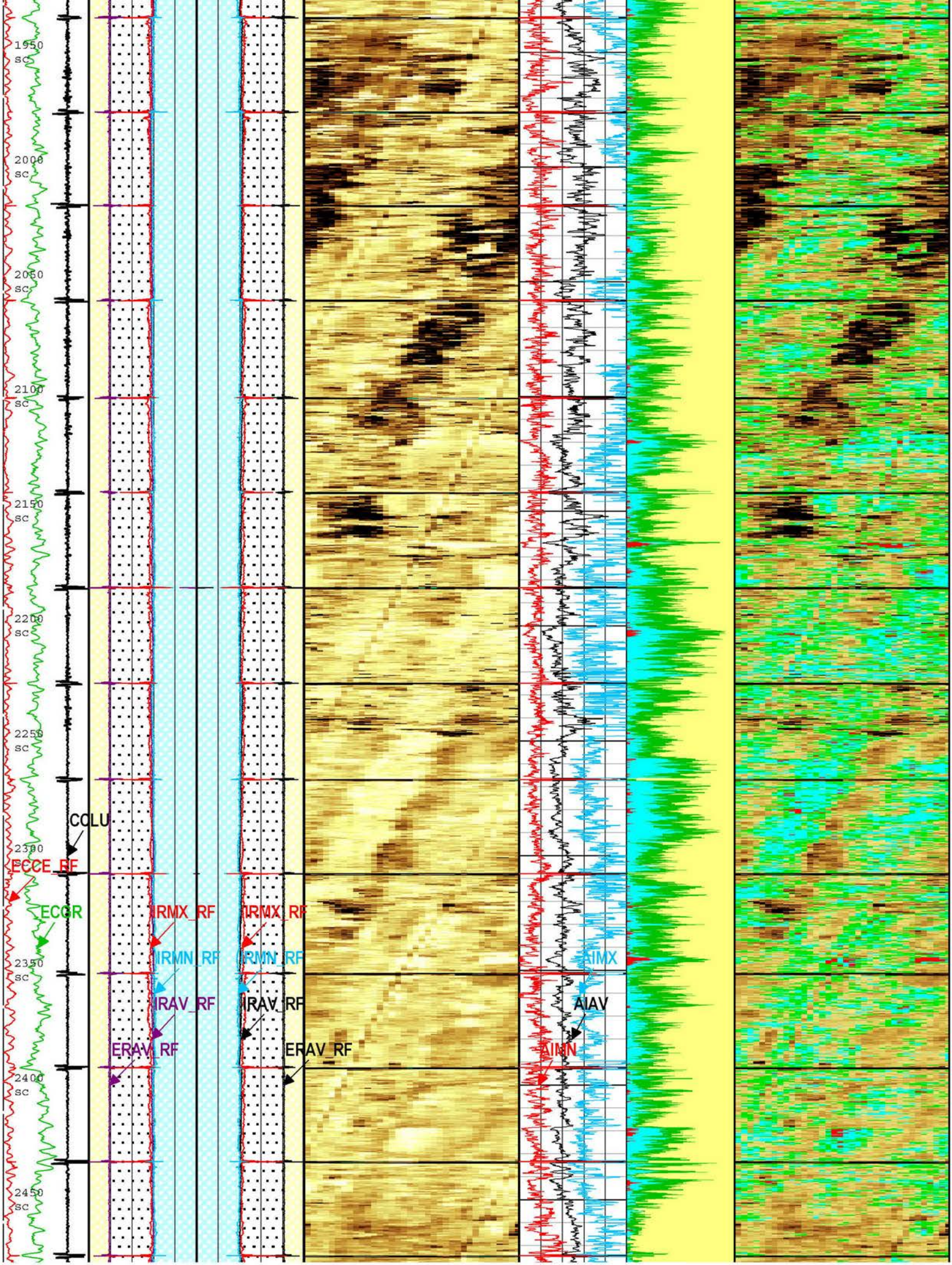
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN


1950 sc
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2050 sc
2100 sc
2150 sc
2200 sc
2250 sc
COLU
2300 sc
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ECGR
IRMX_RF
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IRMN_RF
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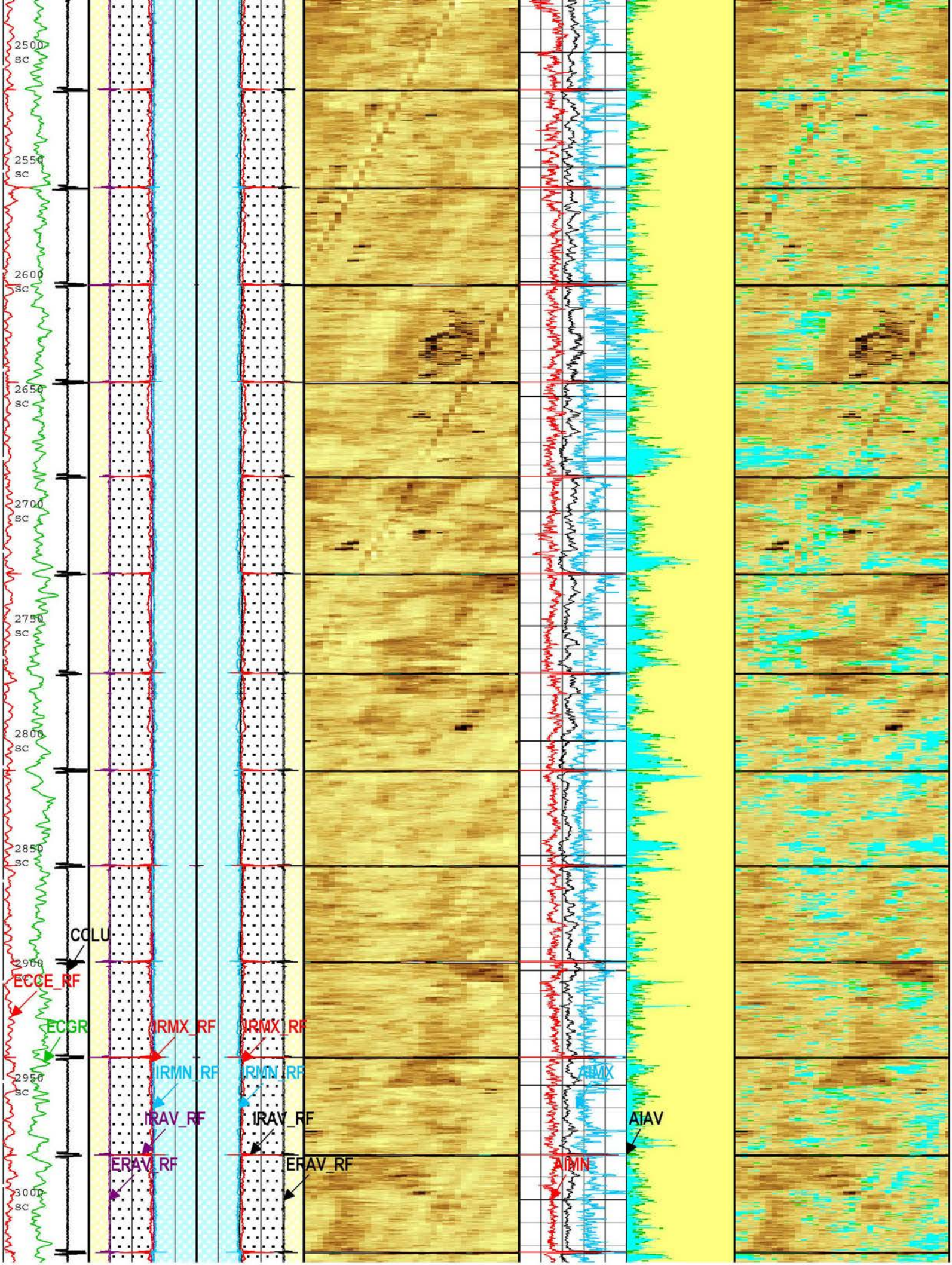
2400 sc
2450 sc
AIMX
AIAV
AIMN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2700 sc
2750 sc
2800 sc
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2900
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ECGR
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IRMX_RF
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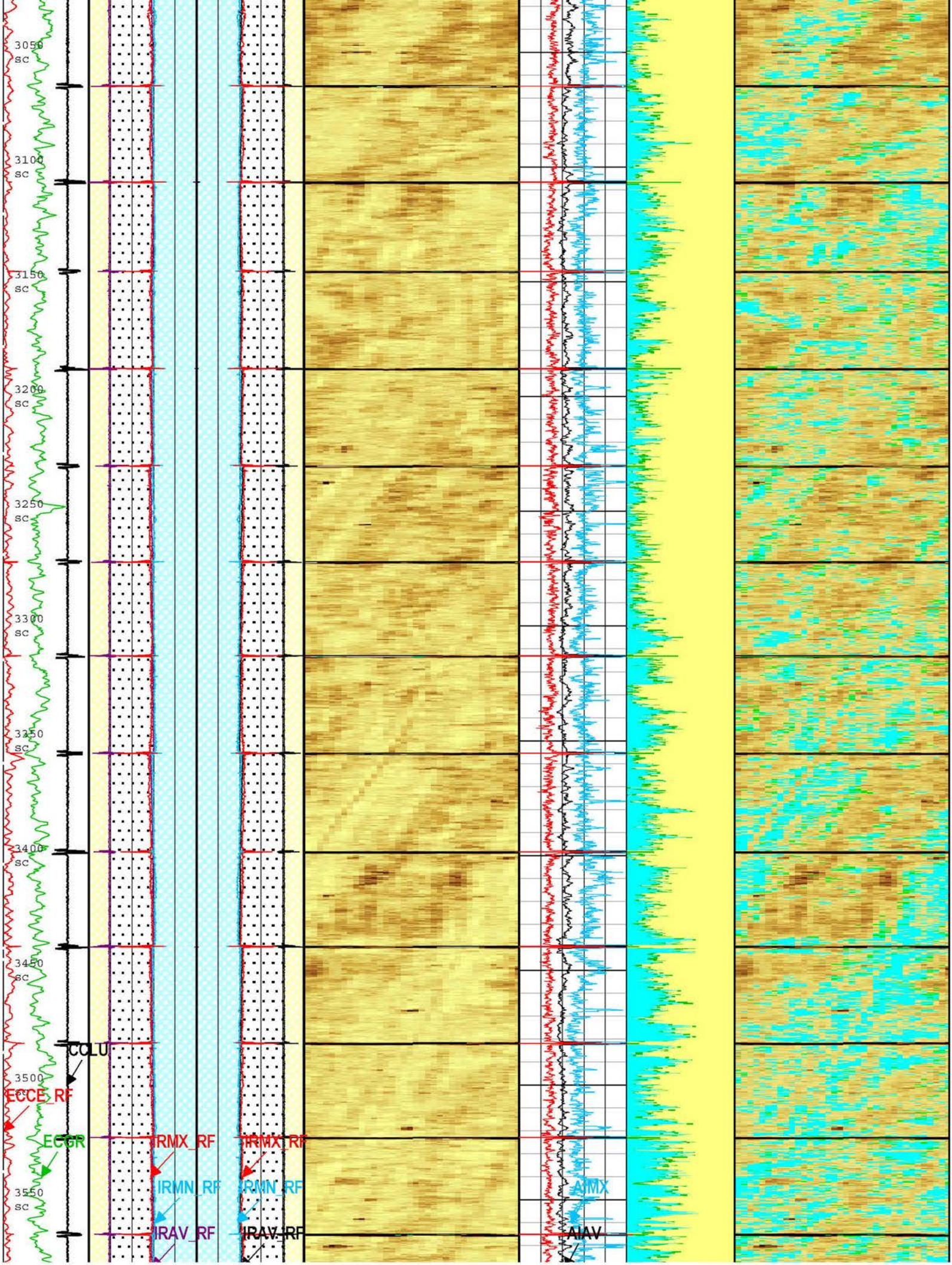
ERAV_RF
3000 sc
AIMX
AIAV
AIMN


3050
sc
3100
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3150
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3200
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3300
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sc
3400
sc
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sc
CCLU
3500
ECCE_RF
ECGR
IRMX_RF
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IRMN_RF
IRMN_RF
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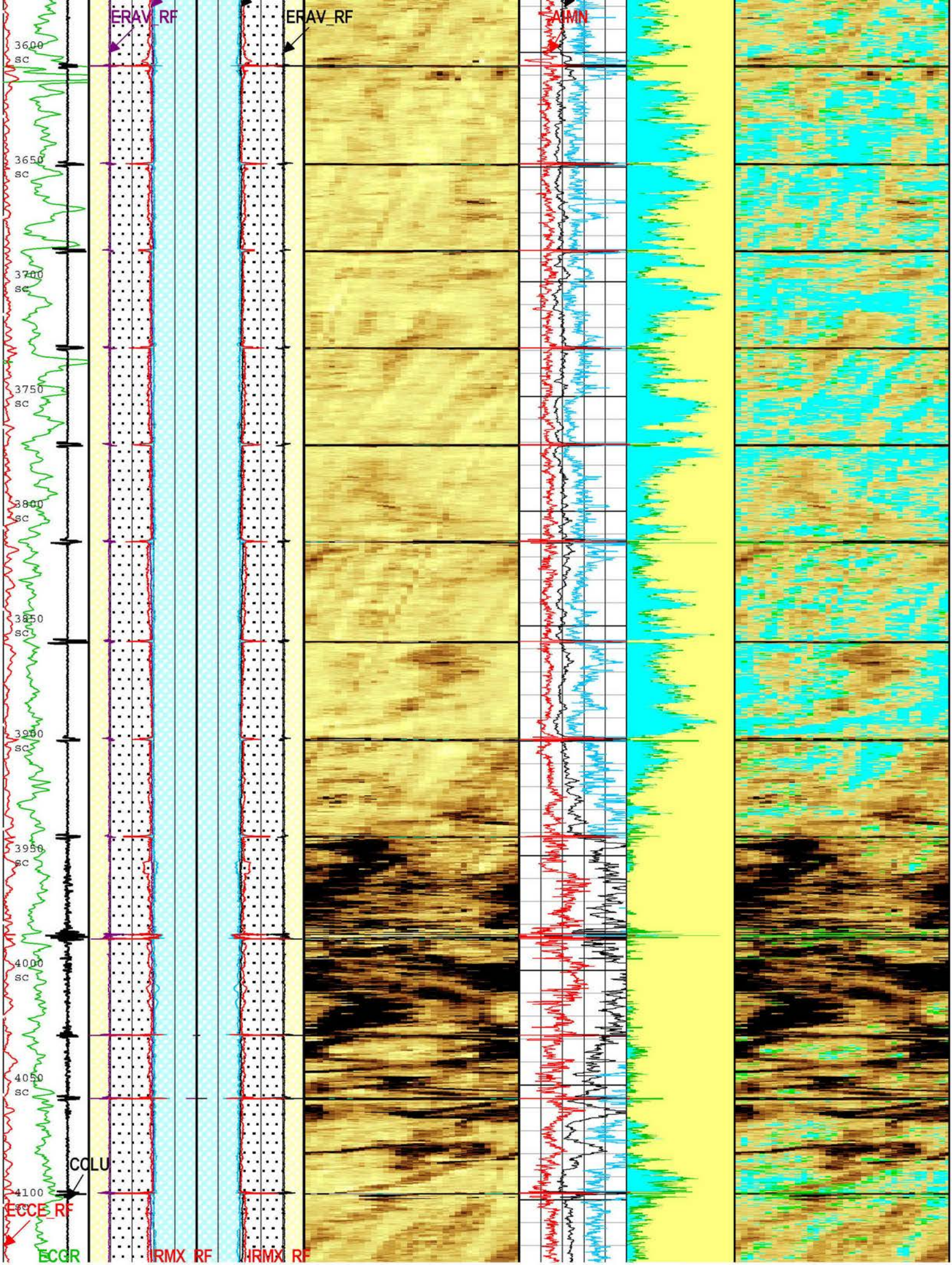
sc
IRAV_RF
IRAV_RF
AIMX
AIAV


ERAV_RF
ERAV_RF
AIMN
3600 sc
3650 sc
3700 sc
3750 sc
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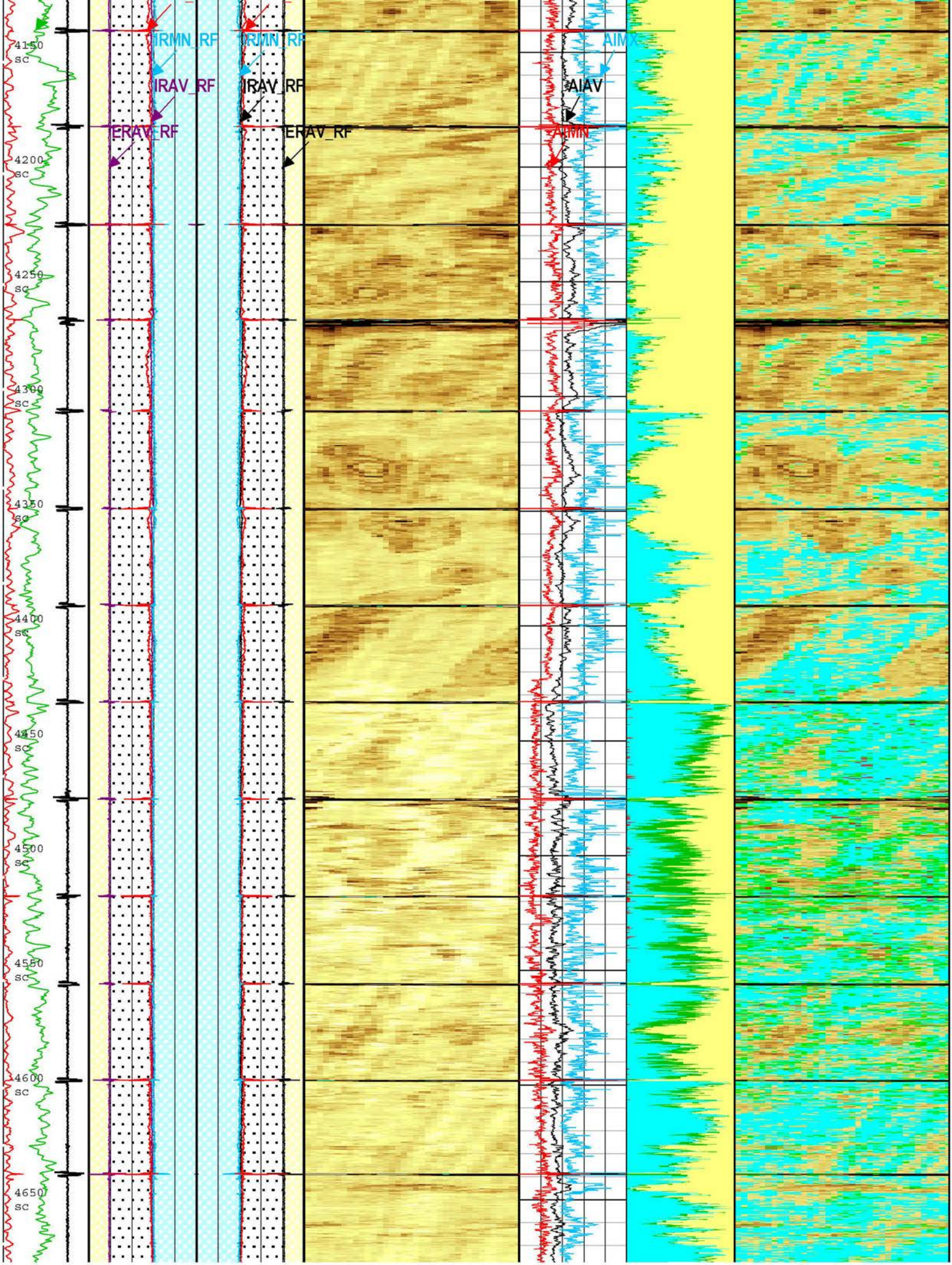
COLU
4100 sc
ECCE_RF
ECGR
IRMX_RF
IRMX_RF


IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
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AIMX
AIAV
AIMN
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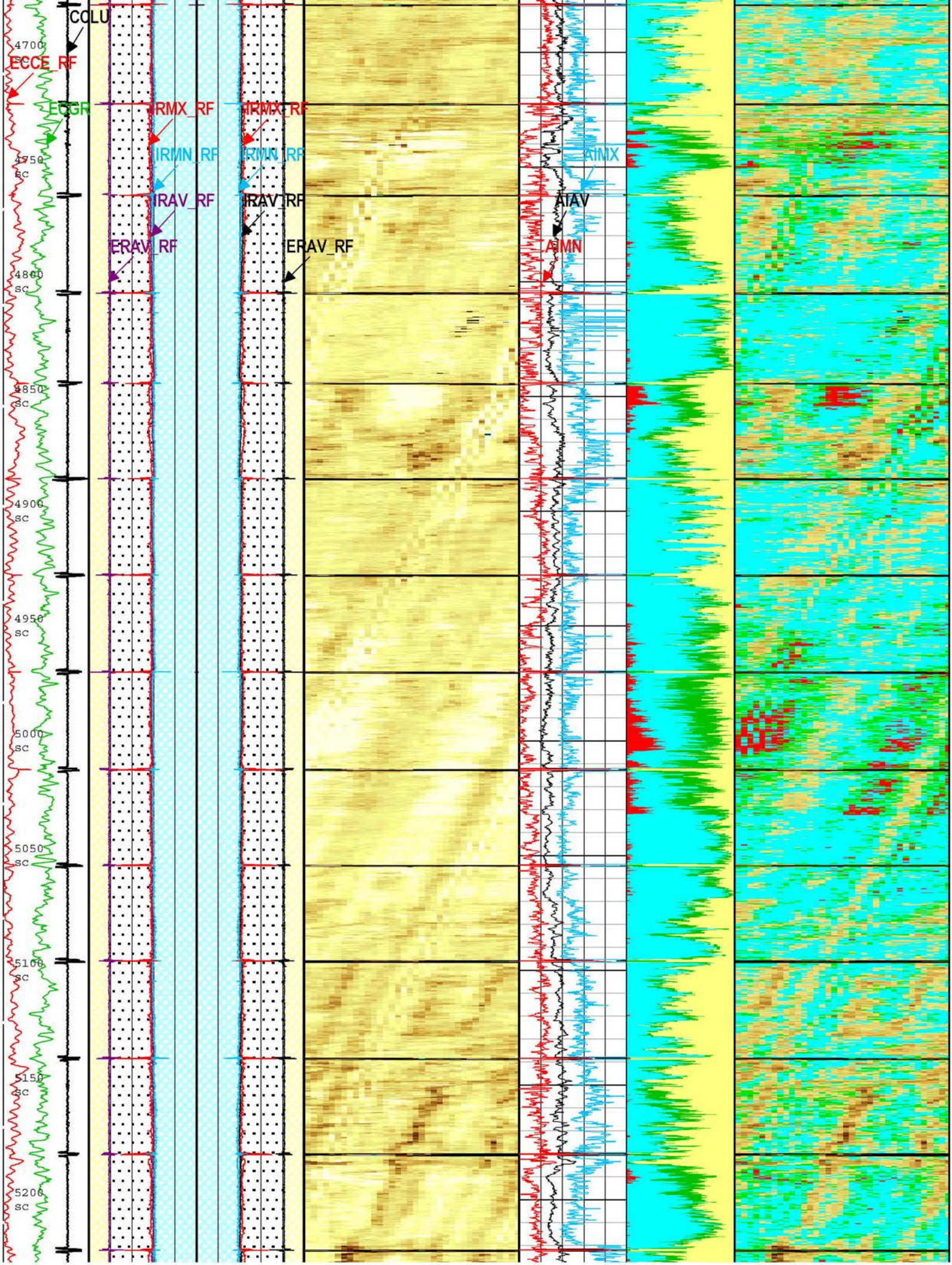
4600 sc
4650 sc


COLU
ECCE_RF
ECGR
IRMX_RF
IRMX_RF
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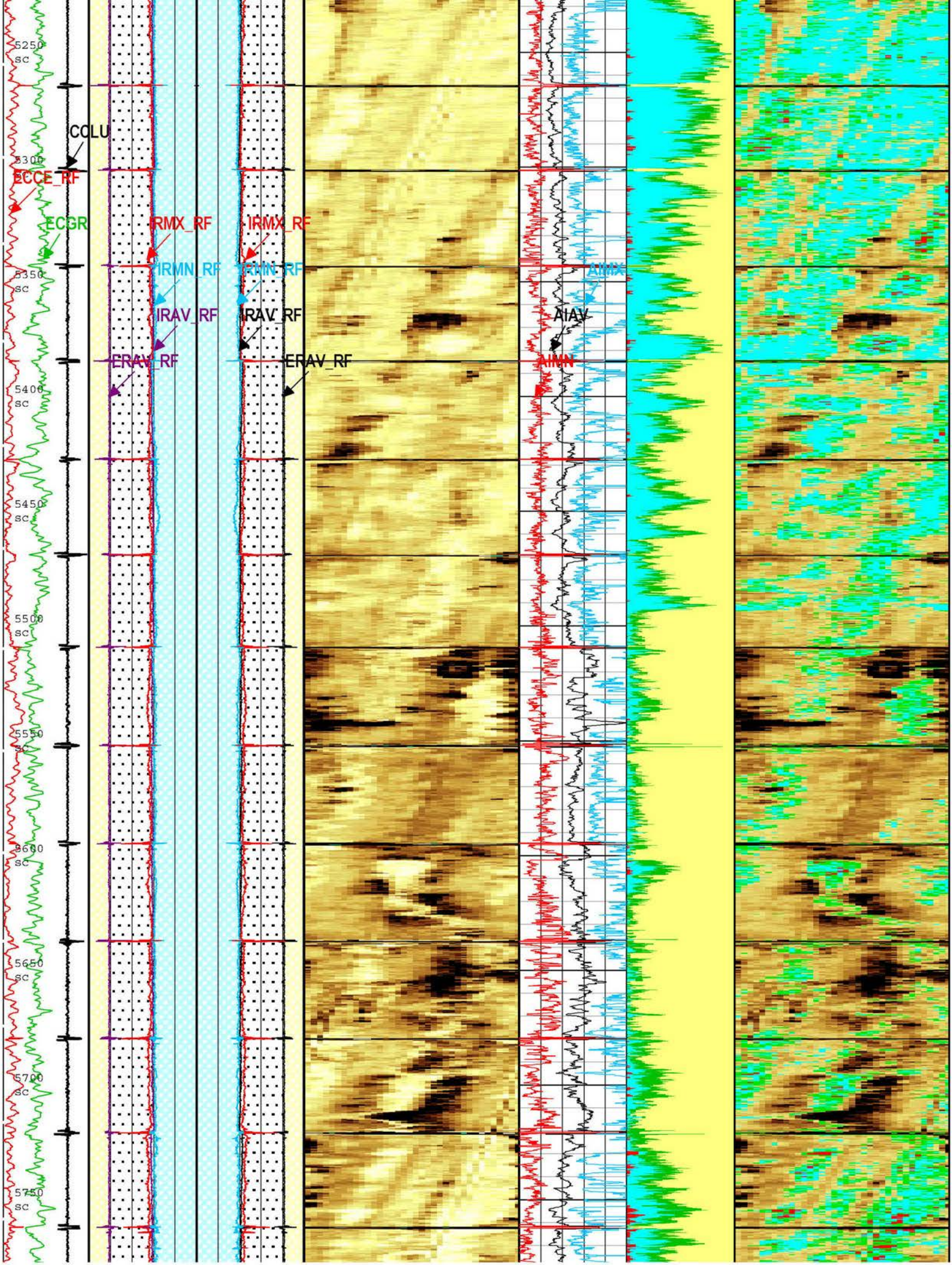
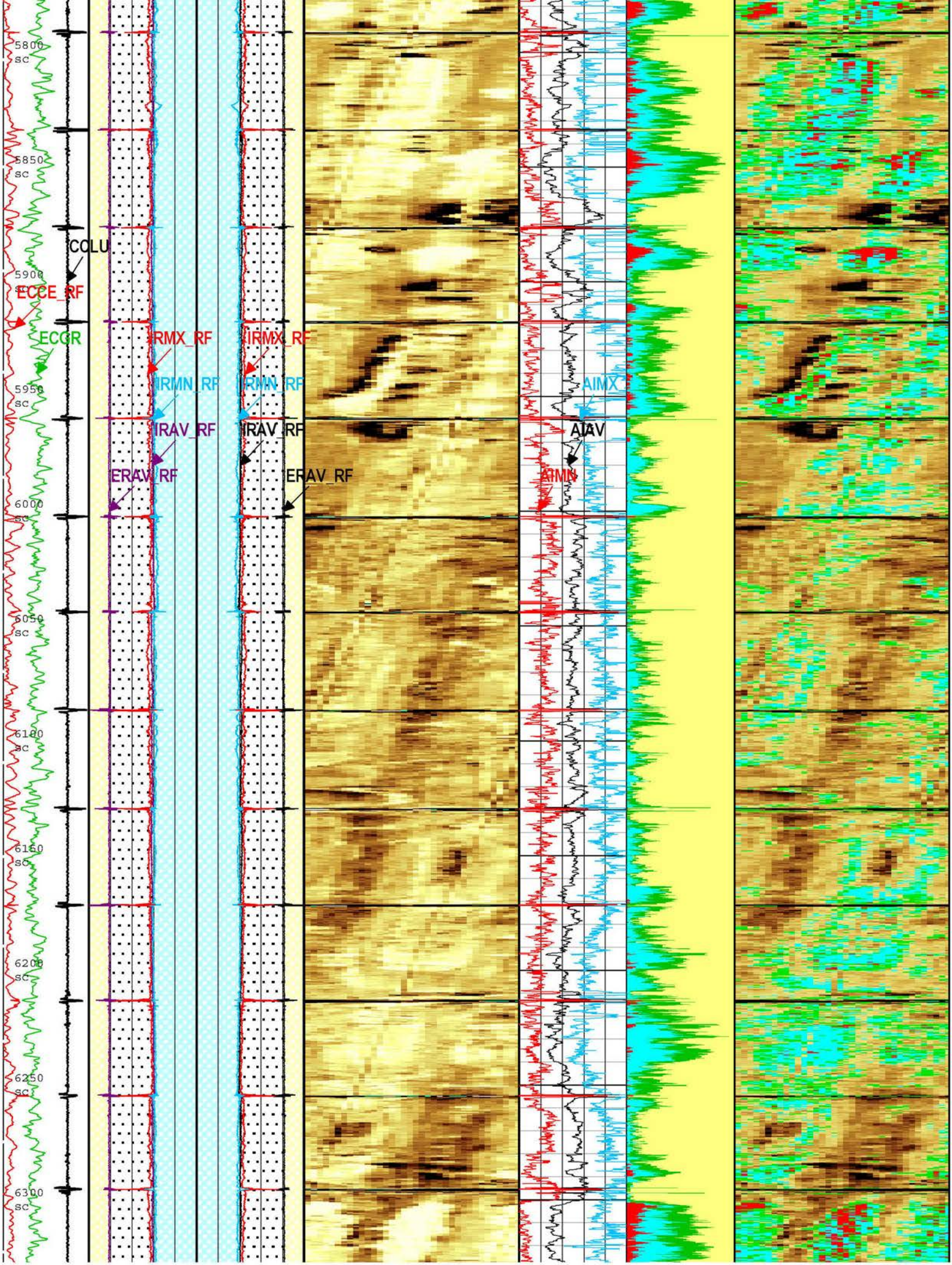
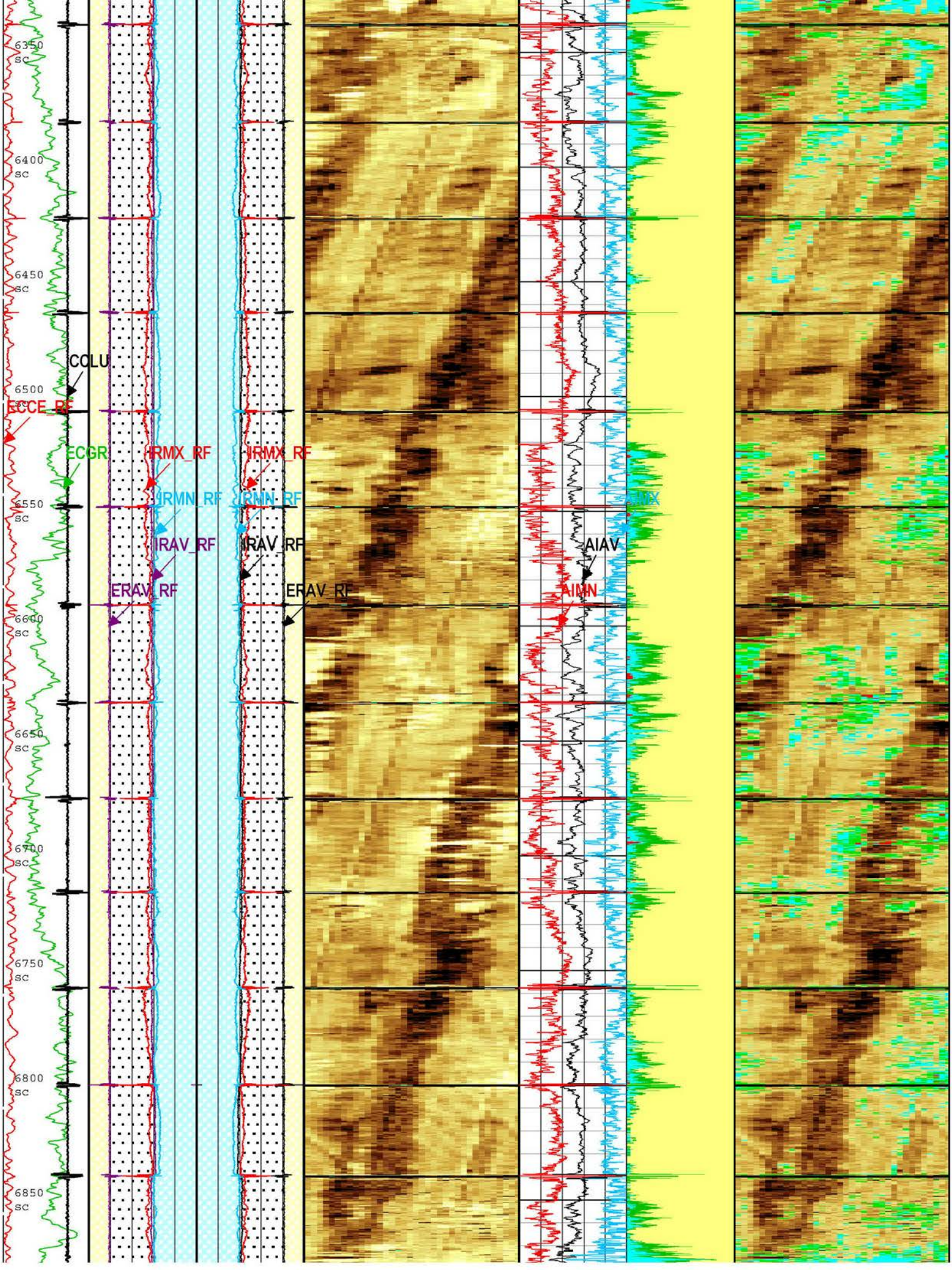
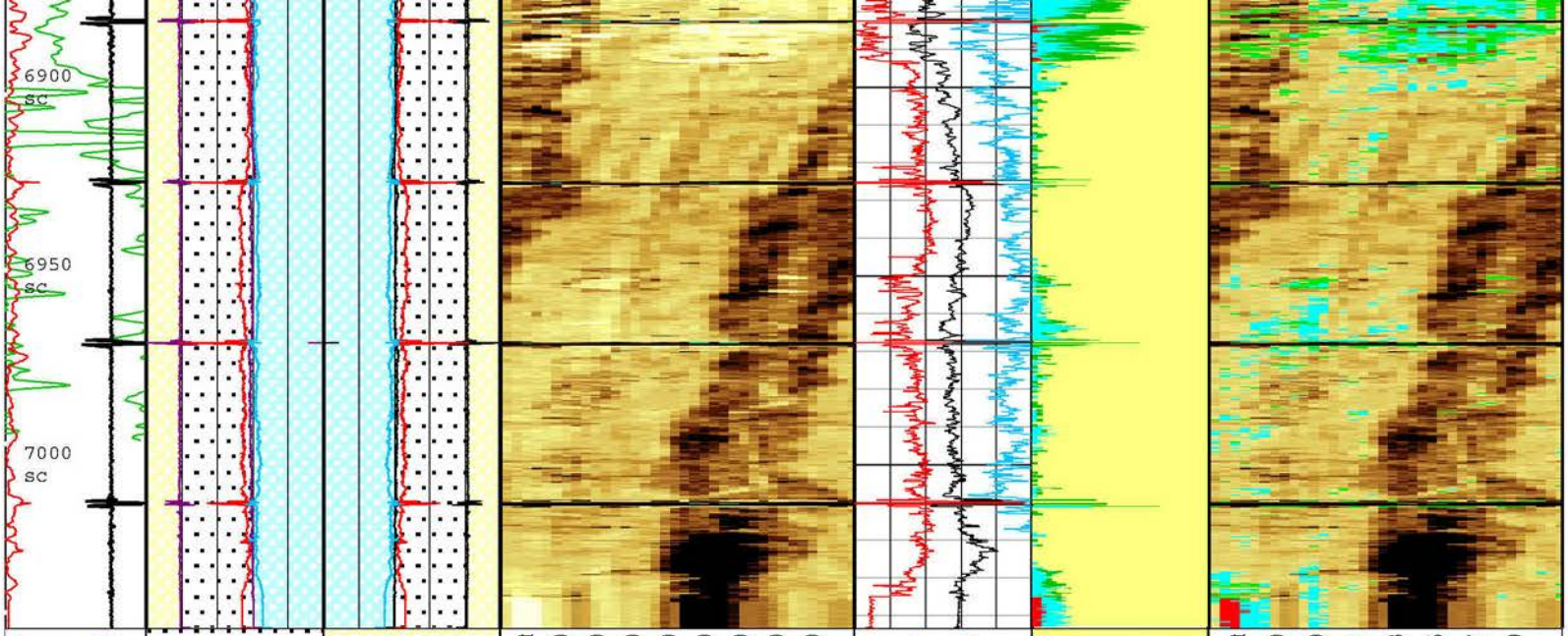
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
4700 sc
4750 sc
4800 sc
4850 sc
4900 sc
4950 sc
5000 sc
5050 sc
5100 sc
5150 sc
5200 sc


5250 sc
COLU
5300 sc
ECCE_RF
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
5350 sc
AIMX
IRAV_RF
IRAV_RF
AIAV
ERAV_RF
ERAV_RF
AIMN
5400 sc
5450 sc
5500 sc
5550 sc
5600 sc
5650 sc
5700 sc
5750 sc


5800 sc
5850 sc
COLU
5900
ECCE_RF
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
5950 sc
AIMX
IRAV_RF
IRAV_RF
AIAV
ERAV_RF
ERAV_RF
AIMN
6000 sc
6050 sc
6100 sc
6150 sc
6200 sc
6250 sc
6300 sc


6350 sc
6400 sc
6450 sc
COLU
6500 sc
ECCE_RF
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
6550 sc
IRAV_RF
IRAV_RF
AIAV
ERAV_RF
ERAV_RF
AIMN
6600 sc
6650 sc
6700 sc
6750 sc
6800 sc
6850 sc



Gamma Ray (ECGR) HGNS-H
50 gAPI 200

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 1

Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10

ERAV_IRAV | ERAV_RHF1
IRAV_LHF1 | IRAV_ERAV
LHF1_ERAV | RHF1_IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Absent 0.500 1.500 2.500 3.500 4.500 5.500 6.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9

Bonded
Gas
Liquid
Micro-debonding

Absent -500.000 2.599 3.581 4.563 5.545 6.527 7.509
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 17-Jul-2017 14:11:28

One

USIT CORROSION 5" = 100'

Software Version

Acquisition System	Version
Maxwell 2017 SP1	7.1.82245.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	4.12 ft	7044.38 ft	02-Jun-2017 1:27:12 AM	02-Jun-2017 4:20:07 AM	ON	4.20 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 35B

One: Log[4]:Up:S011

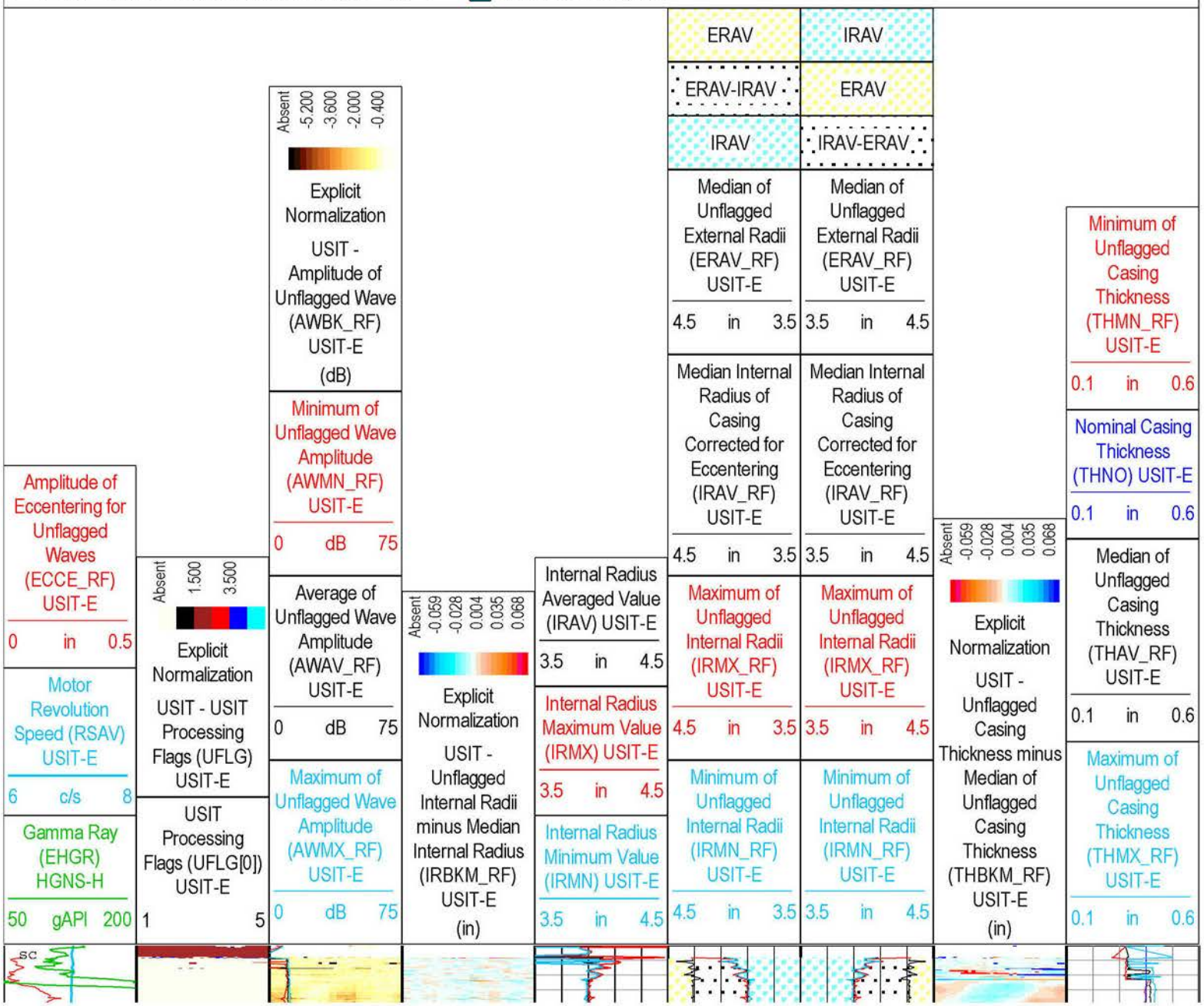
Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:11:36

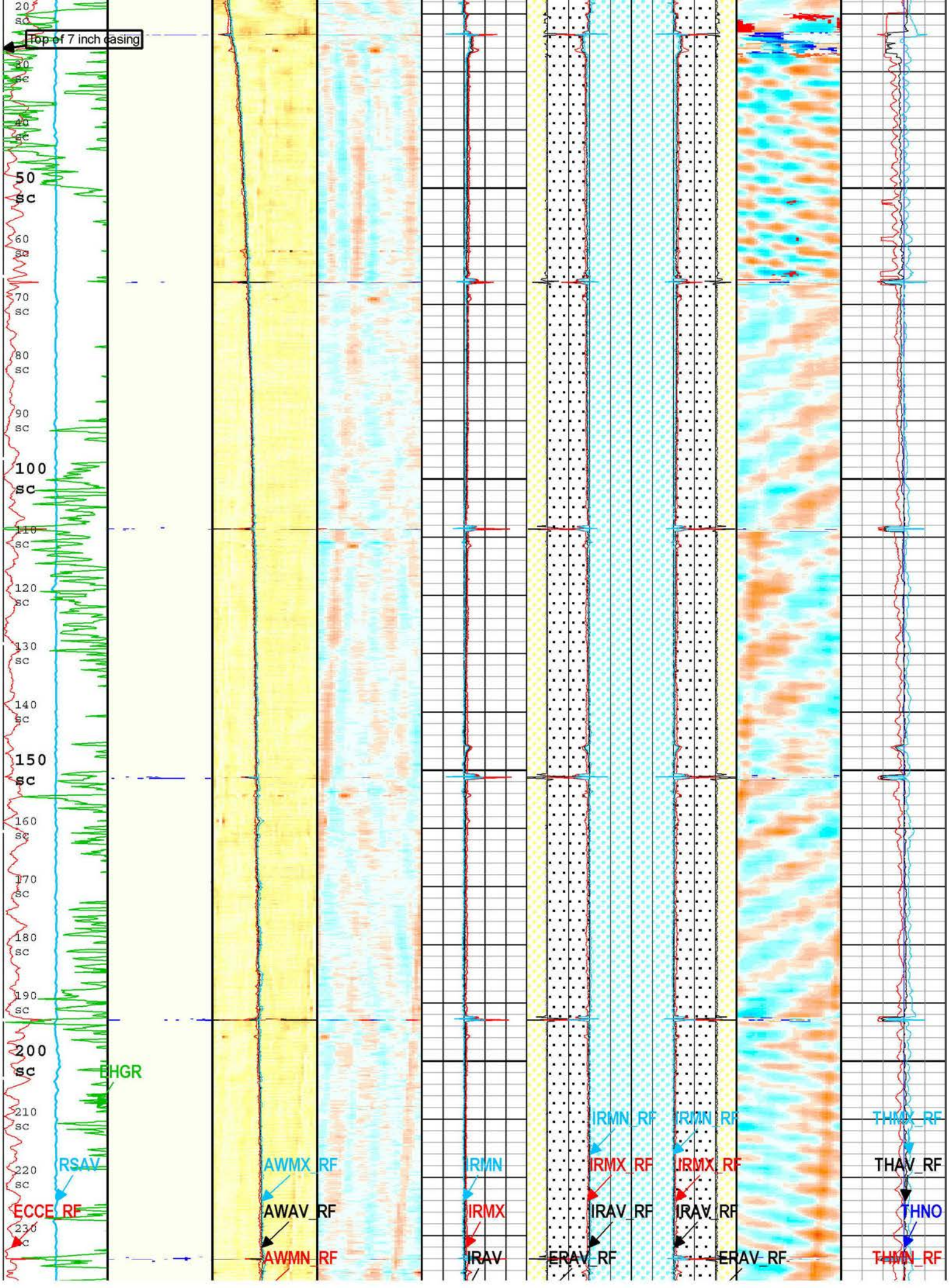
TIME_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error




Top of 7 inch casing
20 sc
30 sc
40 sc
50 sc
60 sc
70 sc
80 sc
90 sc
100 sc
110 sc
120 sc
130 sc
140 sc
150 sc
160 sc
170 sc
180 sc
190 sc
200 sc
210 sc
220 sc
230 sc
EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
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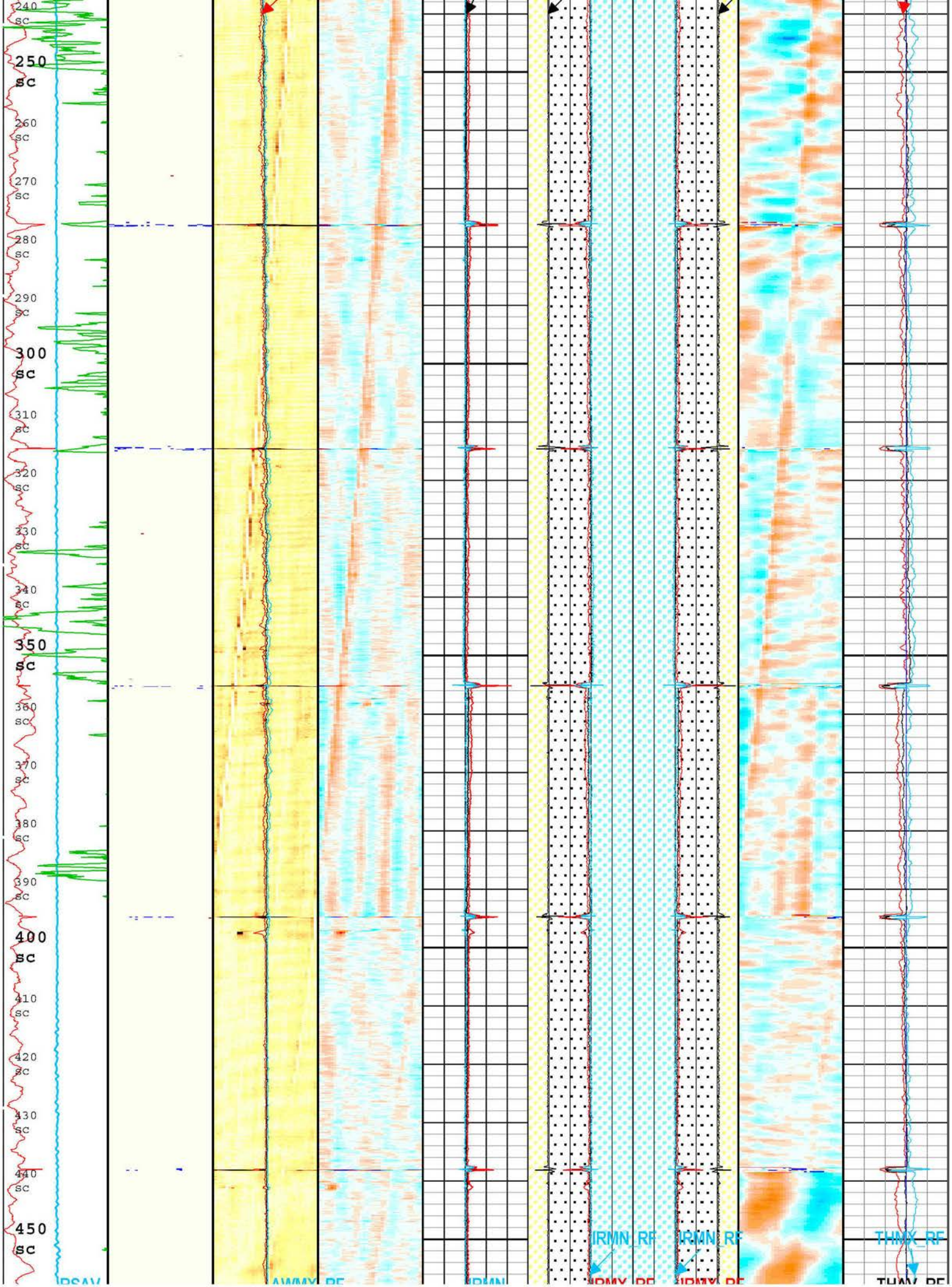
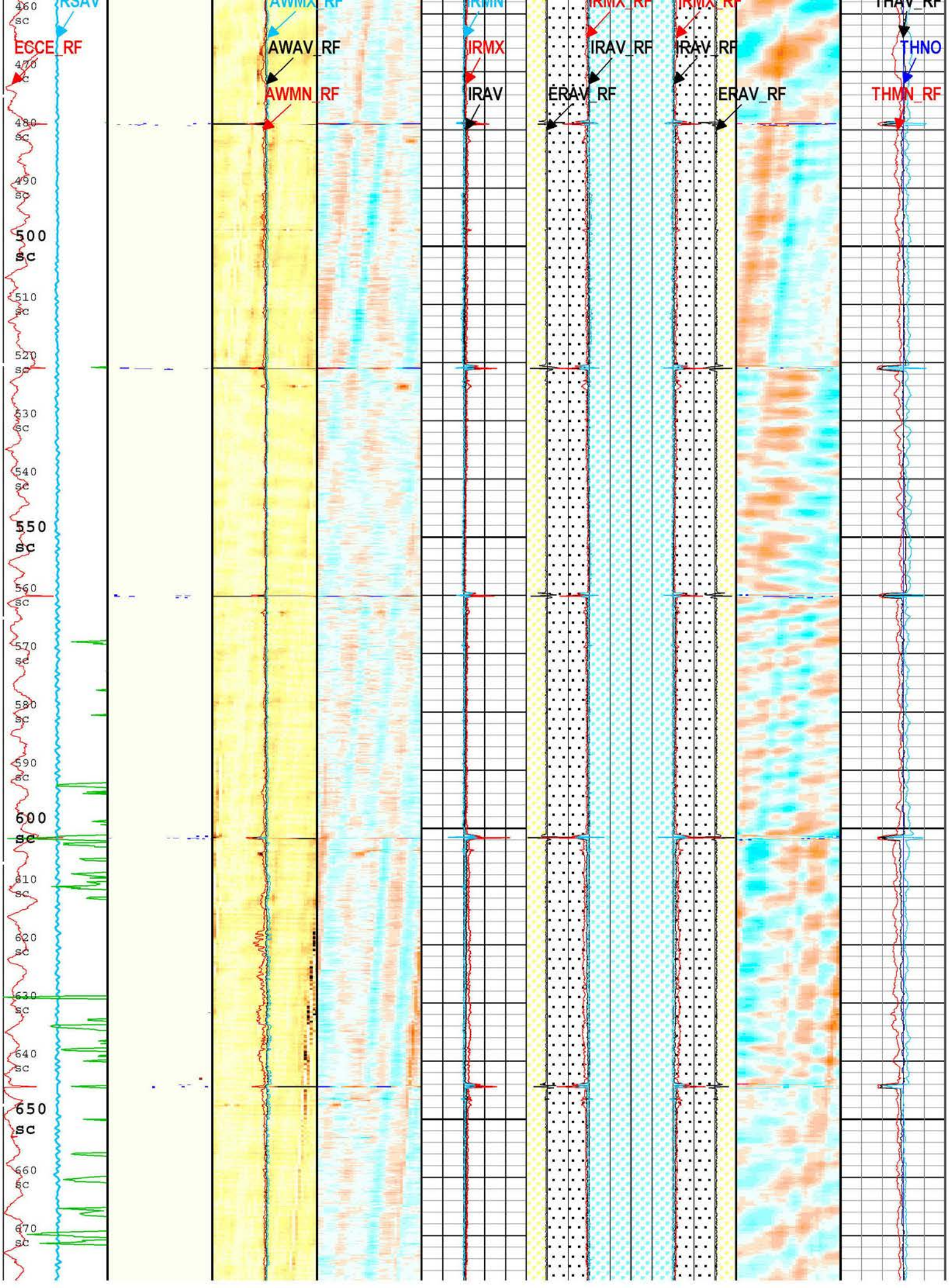
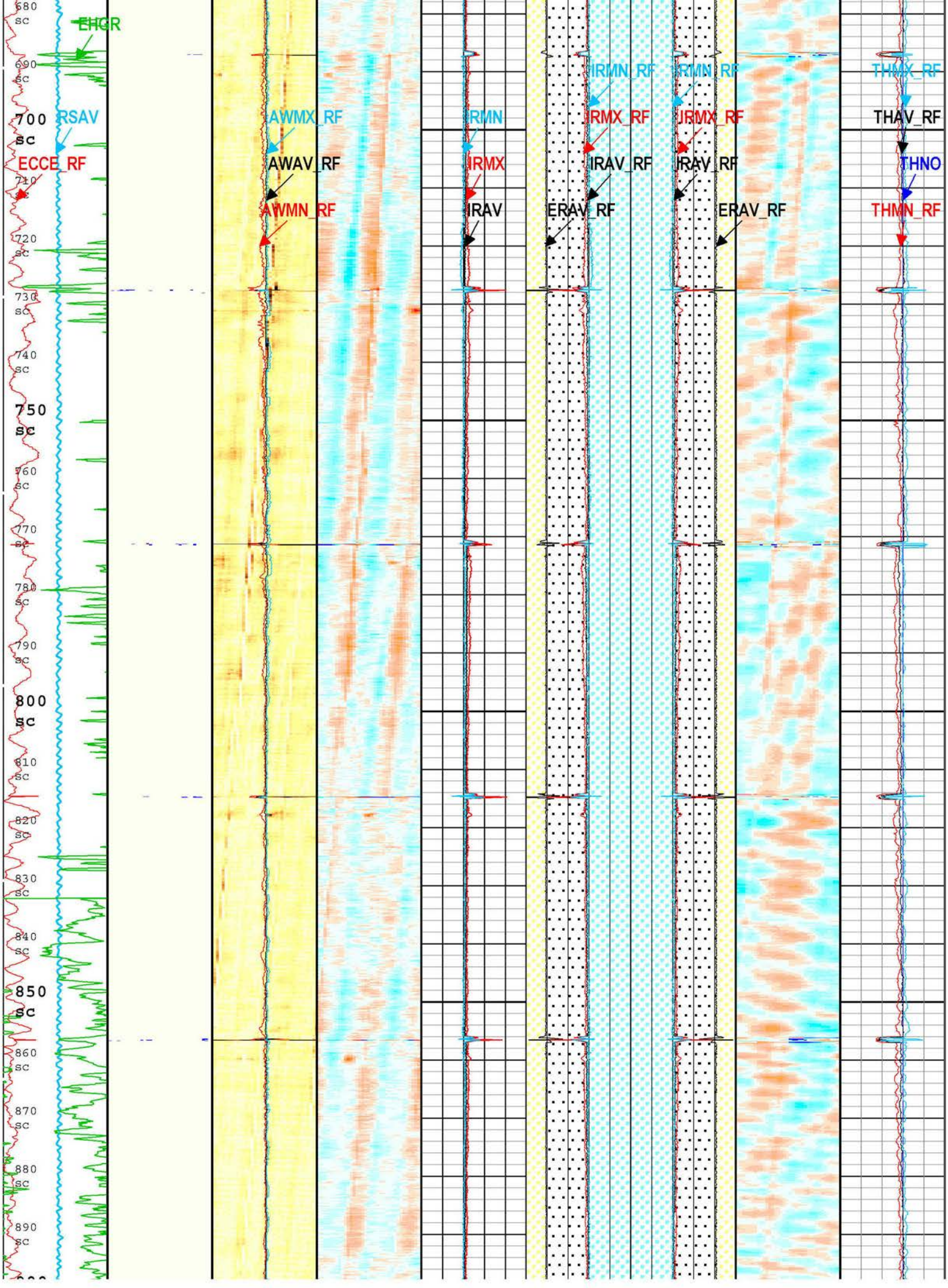
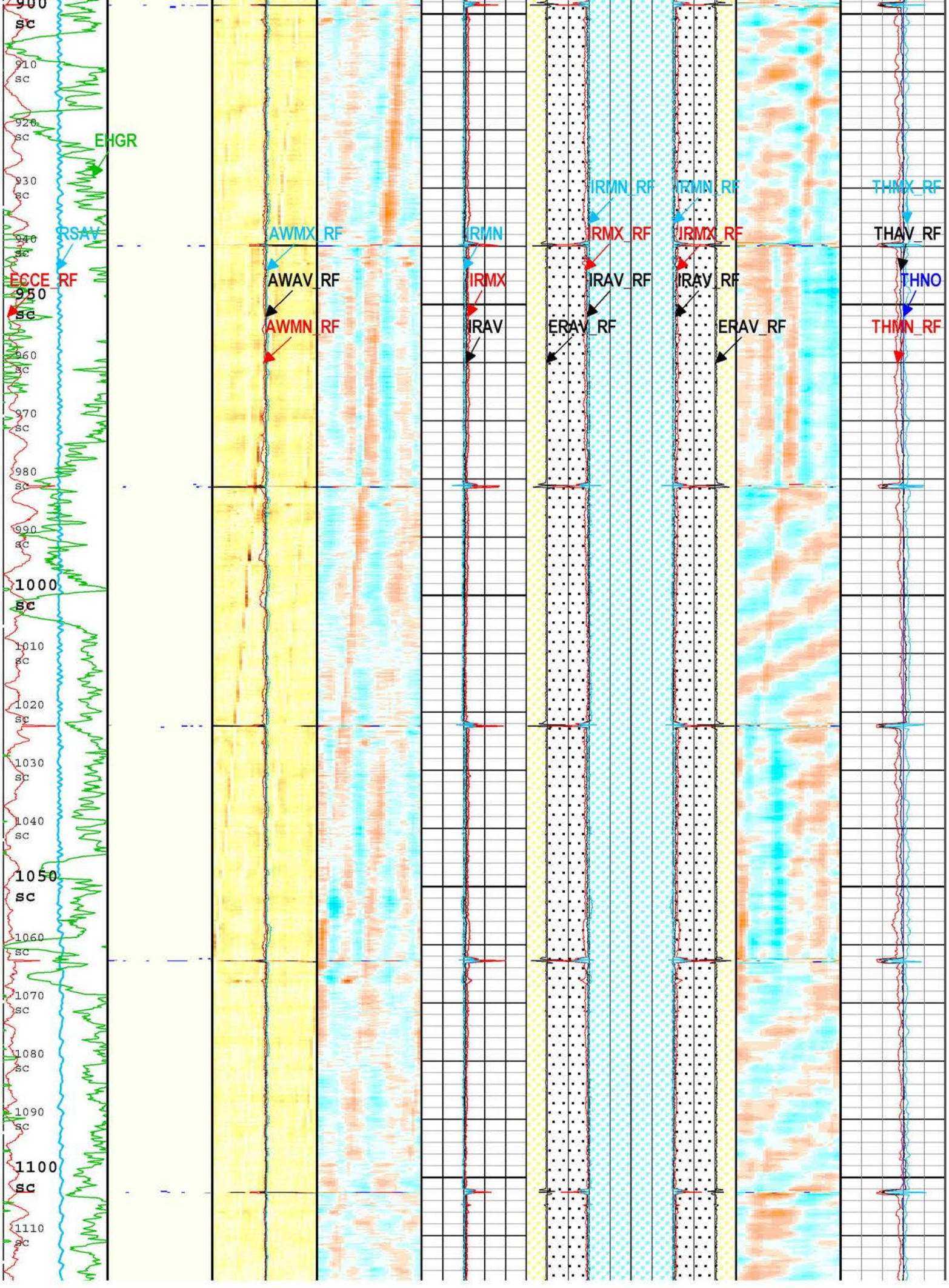
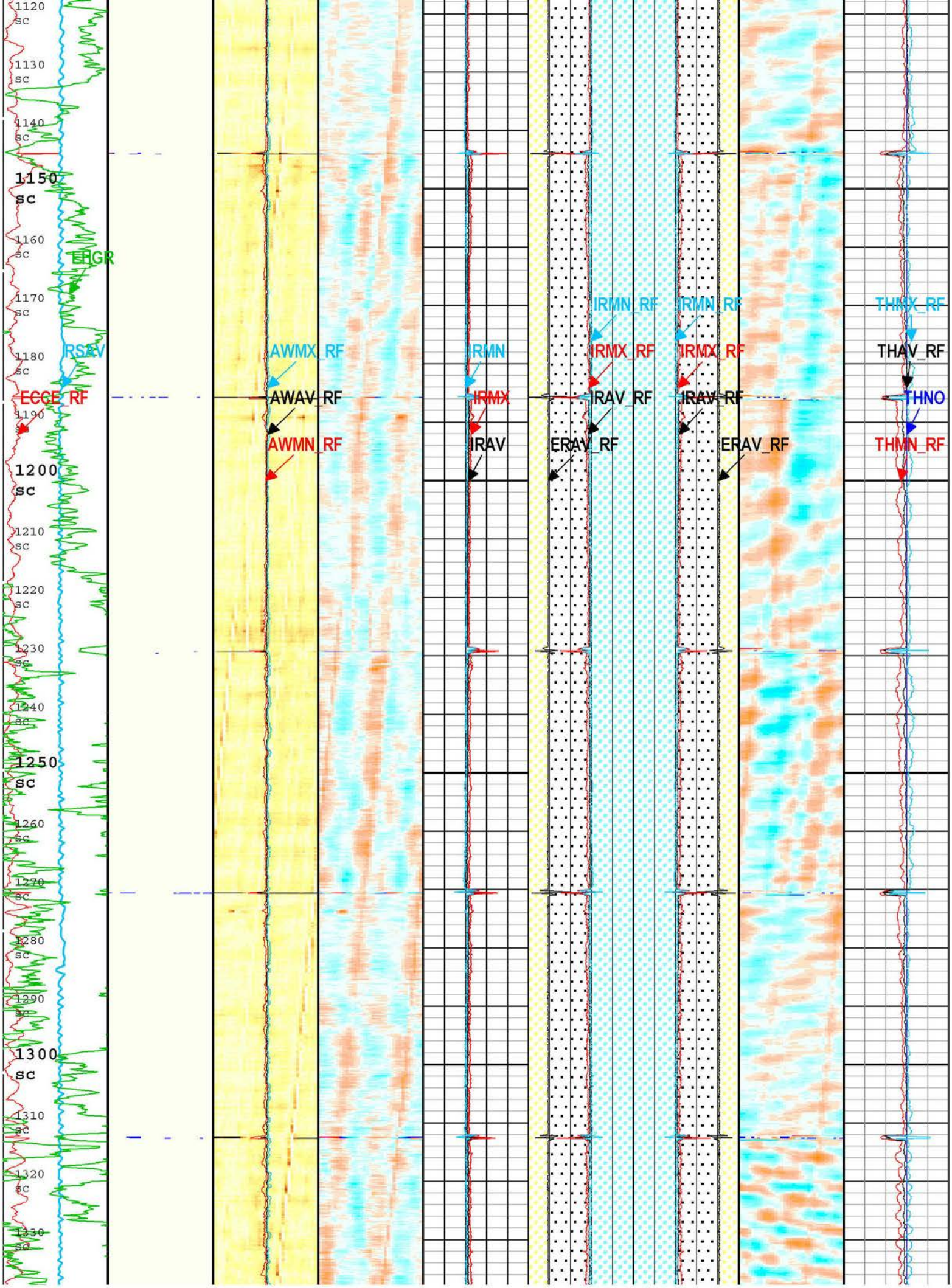
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

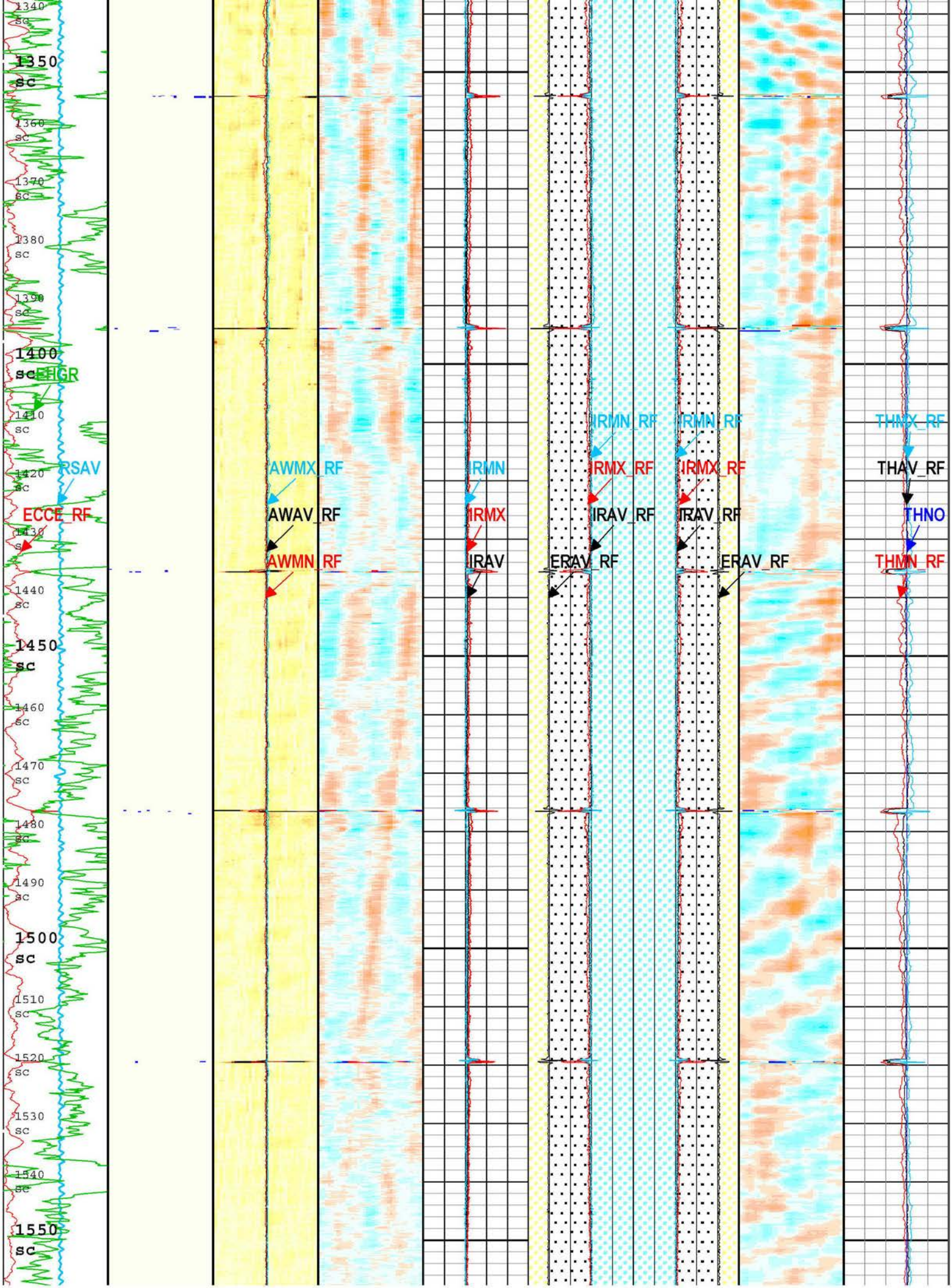

240 sc
250 sc
260 sc
270 sc
280 sc
290 sc
300 sc
310 sc
320 sc
330 sc
340 sc
350 sc
360 sc
370 sc
380 sc
390 sc
400 sc
410 sc
420 sc
430 sc
440 sc
450 sc
IRMN_RF
IRMN_RF
THMX_RF

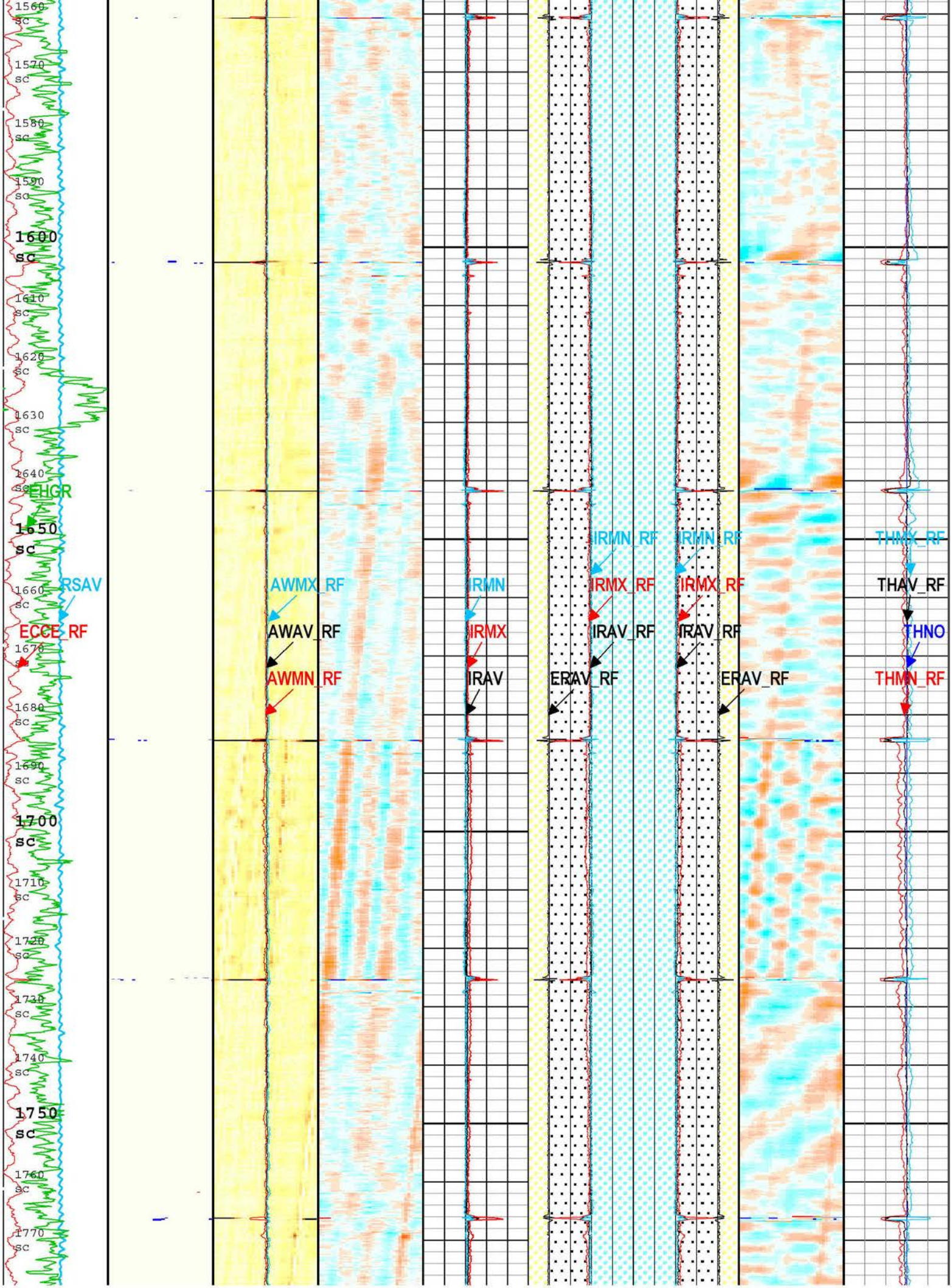

RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMX_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRAV_RF
ERAV_RF
THAV_RF
THNO
THMN_RF
460 sc
470 sc
480 sc
490 sc
500 sc
510 sc
520 sc
530 sc
540 sc
550 sc
560 sc
570 sc
580 sc
590 sc
600 sc
610 sc
620 sc
630 sc
640 sc
650 sc
660 sc
670 sc

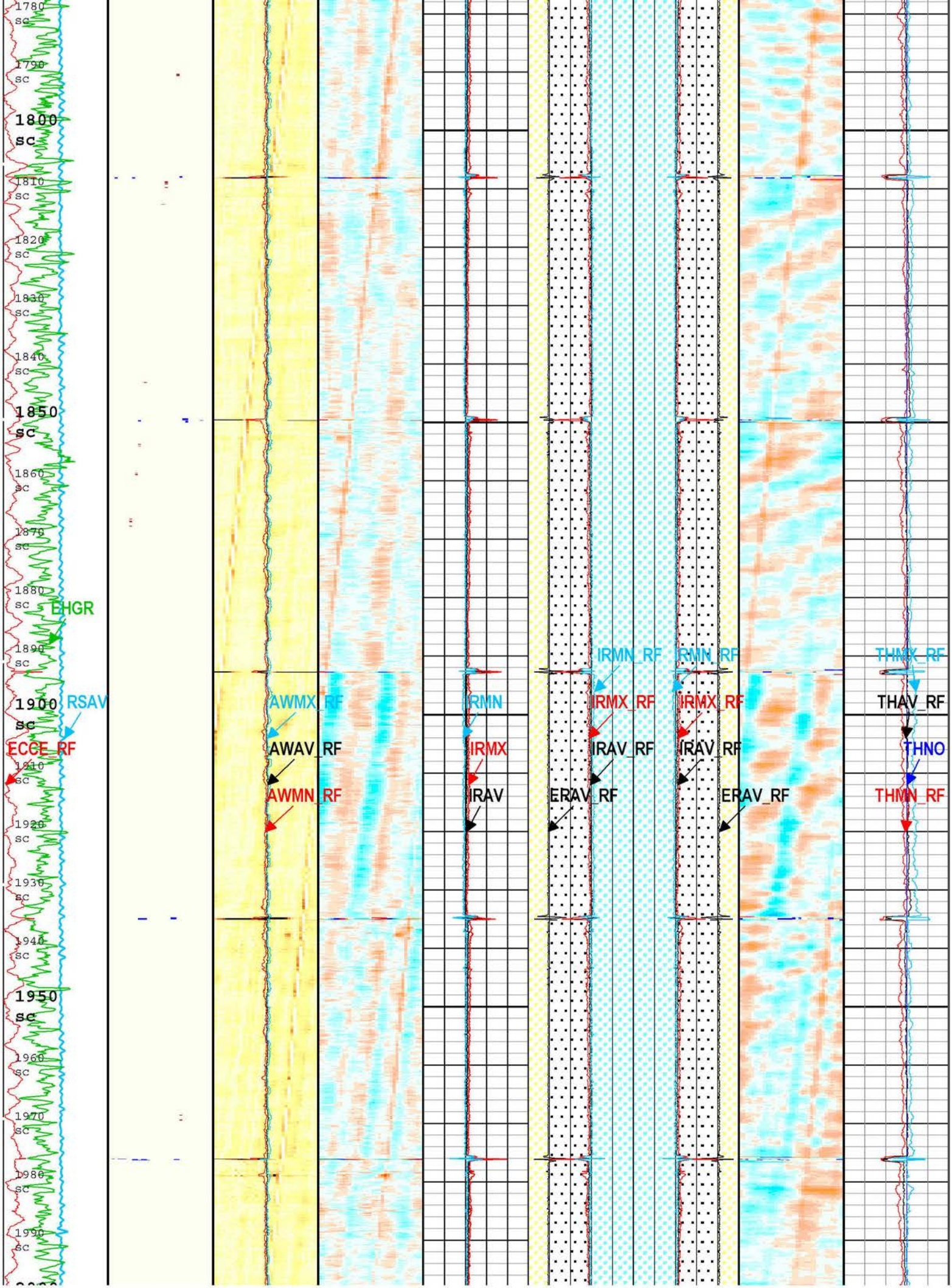

EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
680 sc
690 sc
700 sc
710 sc
720 sc
730 sc
740 sc
750 sc
760 sc
770 sc
780 sc
790 sc
800 sc
810 sc
820 sc
830 sc
840 sc
850 sc
860 sc
870 sc
880 sc
890 sc

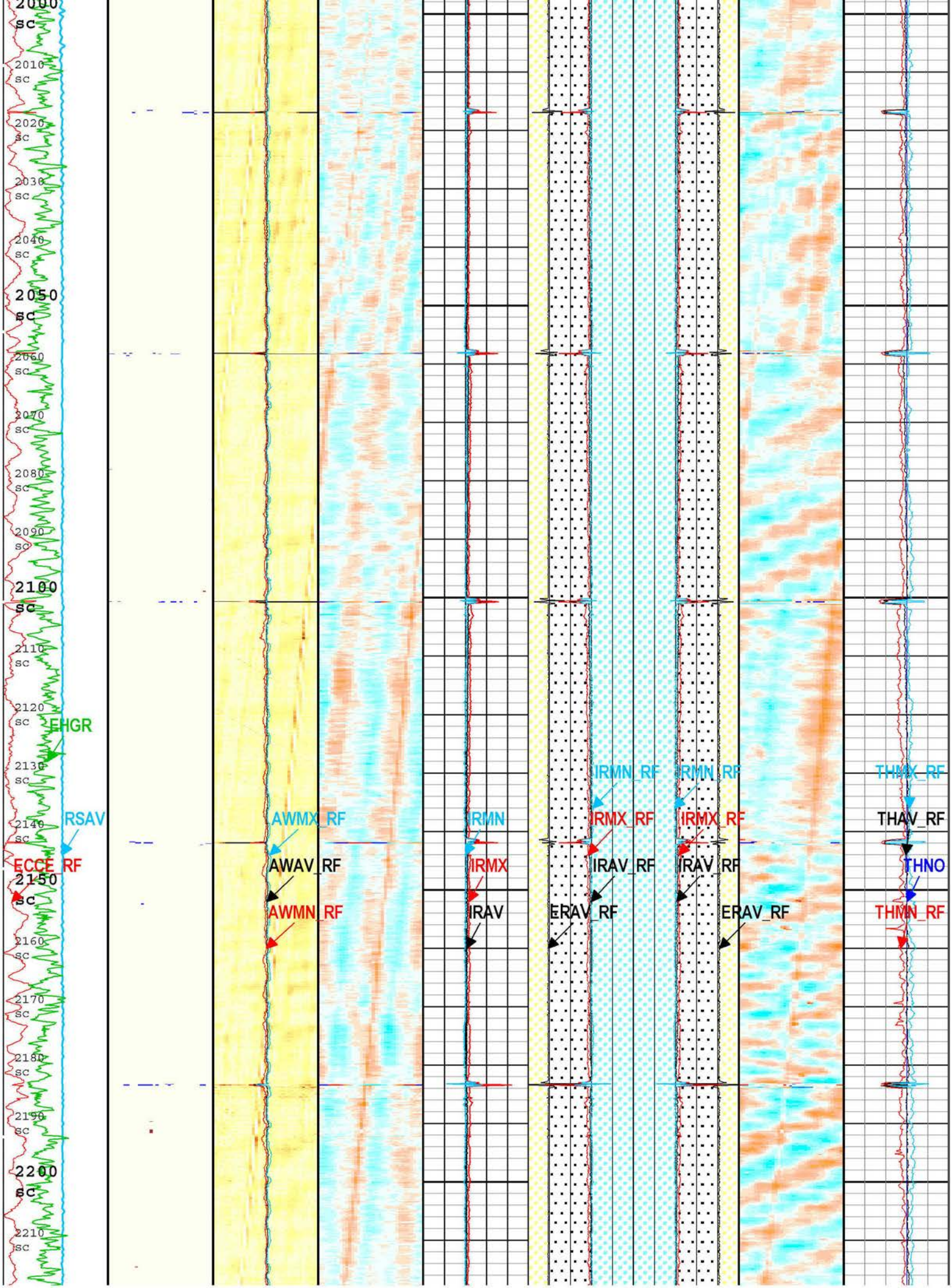

900 sc
910 sc
920 sc
930 sc
940 sc
950 sc
960 sc
970 sc
980 sc
990 sc
1000 sc
1010 sc
1020 sc
1030 sc
1040 sc
1050 sc
1060 sc
1070 sc
1080 sc
1090 sc
1100 sc
1110 sc
EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


1120 sc
1130 sc
1140 sc
1150 sc
1160 sc
1170 sc
1180 sc
1190 sc
1200 sc
1210 sc
1220 sc
1230 sc
1240 sc
1250 sc
1260 sc
1270 sc
1280 sc
1290 sc
1300 sc
1310 sc
1320 sc
1330 sc
THGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


1340 sc
1350 sc
1360 sc
1370 sc
1380 sc
1390 sc
1400 sc
THGR
1410 sc
RSAV
1420 sc
ECCE_RF
1430 sc
1440 sc
1450 sc
1460 sc
1470 sc
1480 sc
1490 sc
1500 sc
1510 sc
1520 sc
1530 sc
1540 sc
1550 sc
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


1560 sc
1570 sc
1580 sc
1590 sc
1600 sc
1610 sc
1620 sc
1630 sc
1640 sc
EHGR
1650 sc
RSAV
1660 sc
ECCE_RF
1670 sc
1680 sc
1690 sc
1700 sc
1710 sc
1720 sc
1730 sc
1740 sc
1750 sc
1760 sc
1770 sc
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


1780 sc
1790 sc
1800 sc
1810 sc
1820 sc
1830 sc
1840 sc
1850 sc
1860 sc
1870 sc
1880 sc
EHGR
1890 sc
1900 sc
RSAV
ECCE_RF
1910 sc
1920 sc
1930 sc
1940 sc
1950 sc
1960 sc
1970 sc
1980 sc
1990 sc
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


2000 sc
2010 sc
2020 sc
2030 sc
2040 sc
2050 sc
2060 sc
2070 sc
2080 sc
2090 sc
2100 sc
2110 sc
2120 sc
2130 sc
2140 sc
2150 sc
2160 sc
2170 sc
2180 sc
2190 sc
2200 sc
2210 sc
EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
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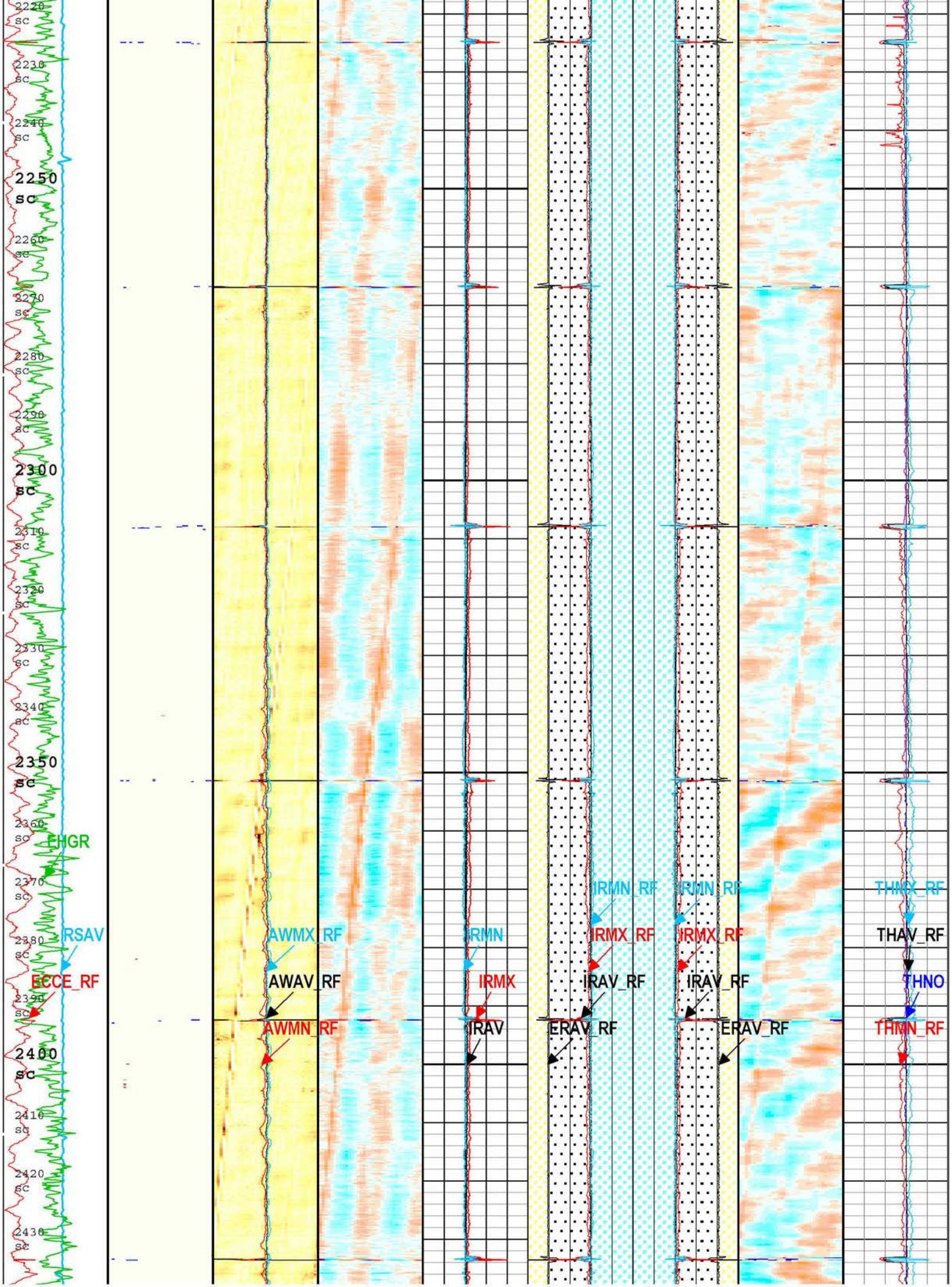
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


2220 sc
2230 sc
2240 sc
2250 sc
2260 sc
2270 sc
2280 sc
2290 sc
2300 sc
2310 sc
2320 sc
2330 sc
2340 sc
2350 sc
2360 sc
2370 sc
2380 sc
2390 sc
2400 sc
2410 sc
2420 sc
2430 sc
EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
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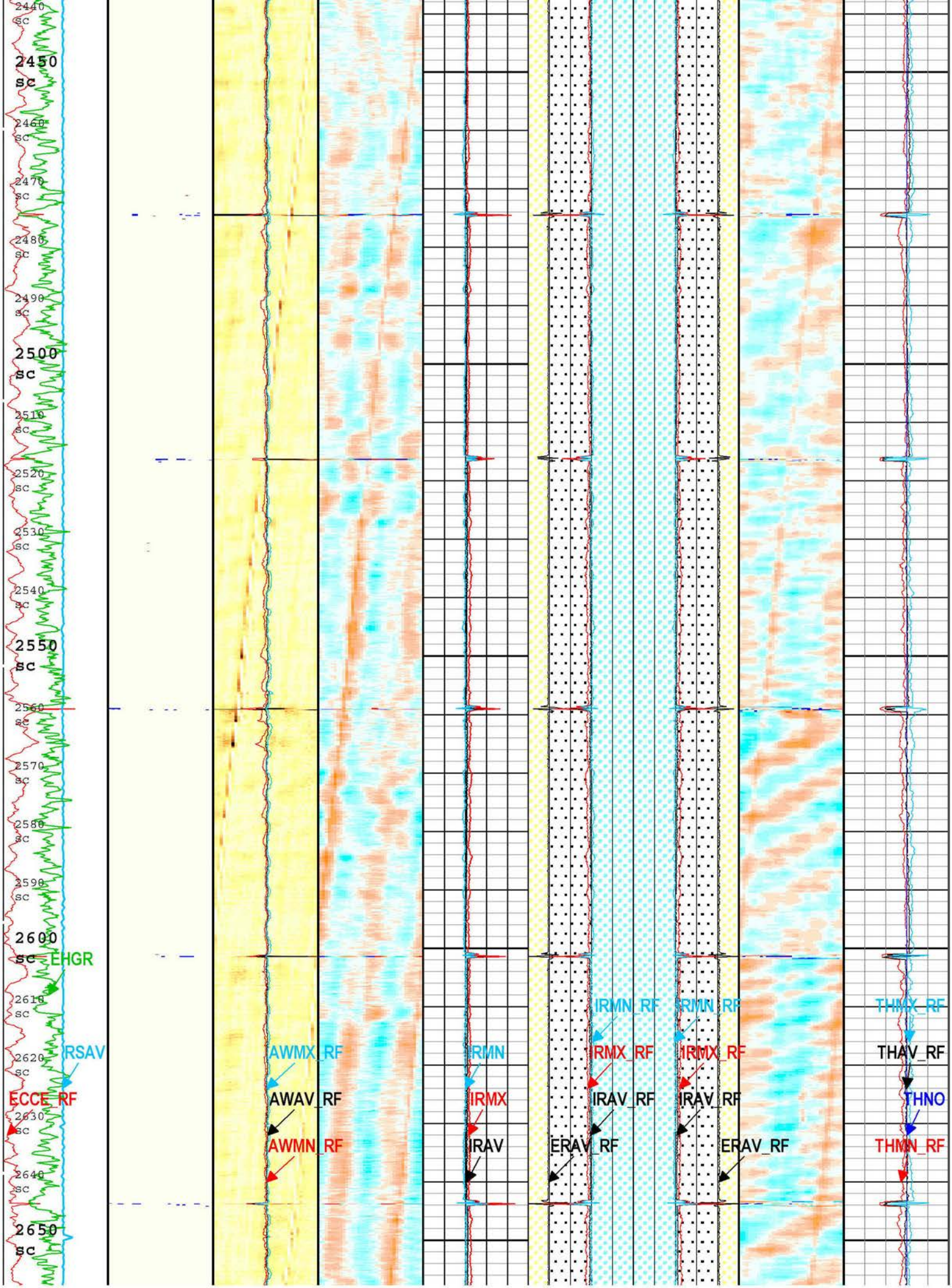
ERAV_RF
THNX_RF
THAV_RF
THNO
THMN_RF


2440 sc
2450 sc
2460 sc
2470 sc
2480 sc
2490 sc
2500 sc
2510 sc
2520 sc
2530 sc
2540 sc
2550 sc
2560 sc
2570 sc
2580 sc
2590 sc
2600 sc
EHGR
2610 sc
2620 sc
RSAV
ECCE_RF
2630 sc
2640 sc
2650 sc
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
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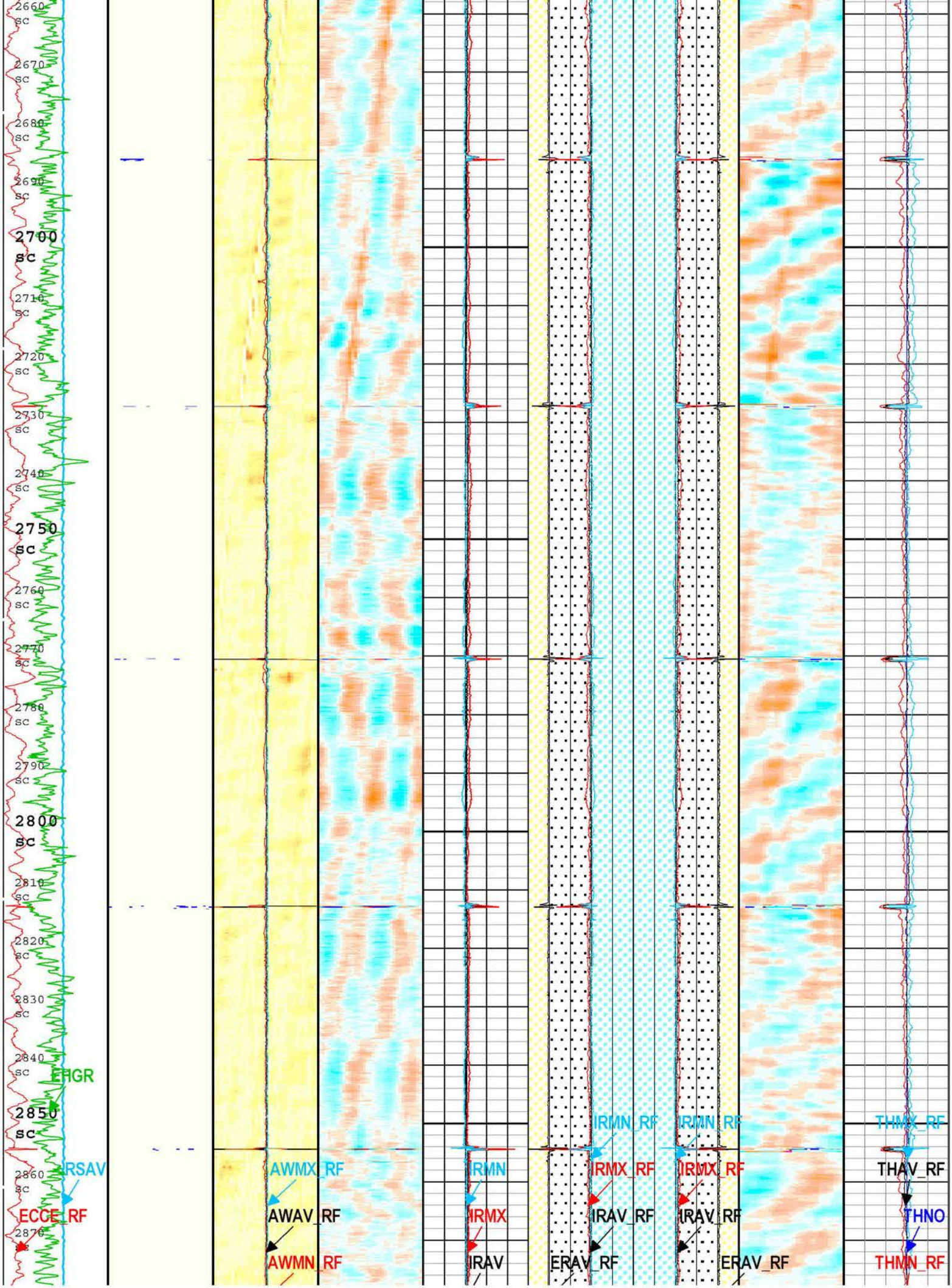
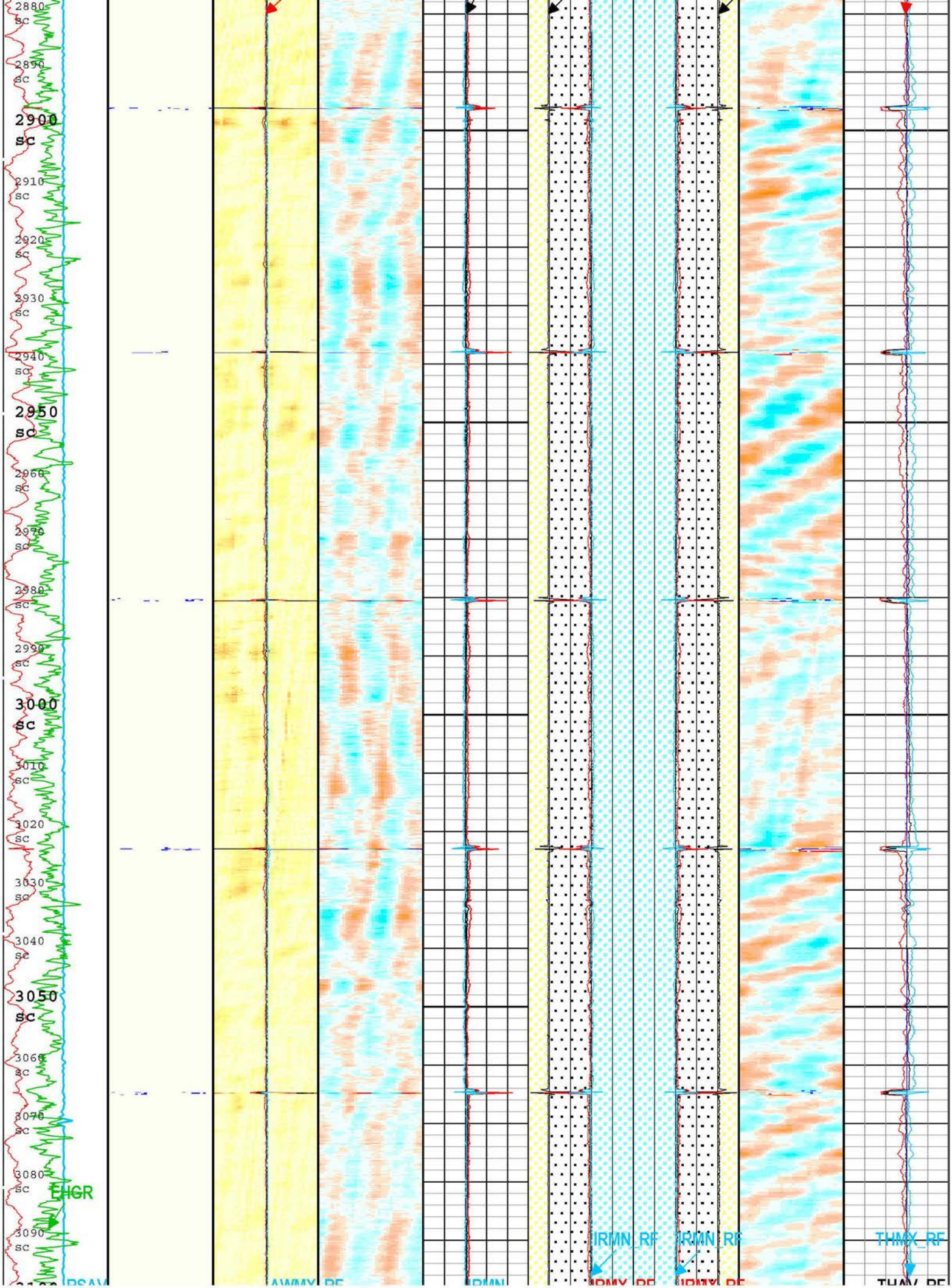
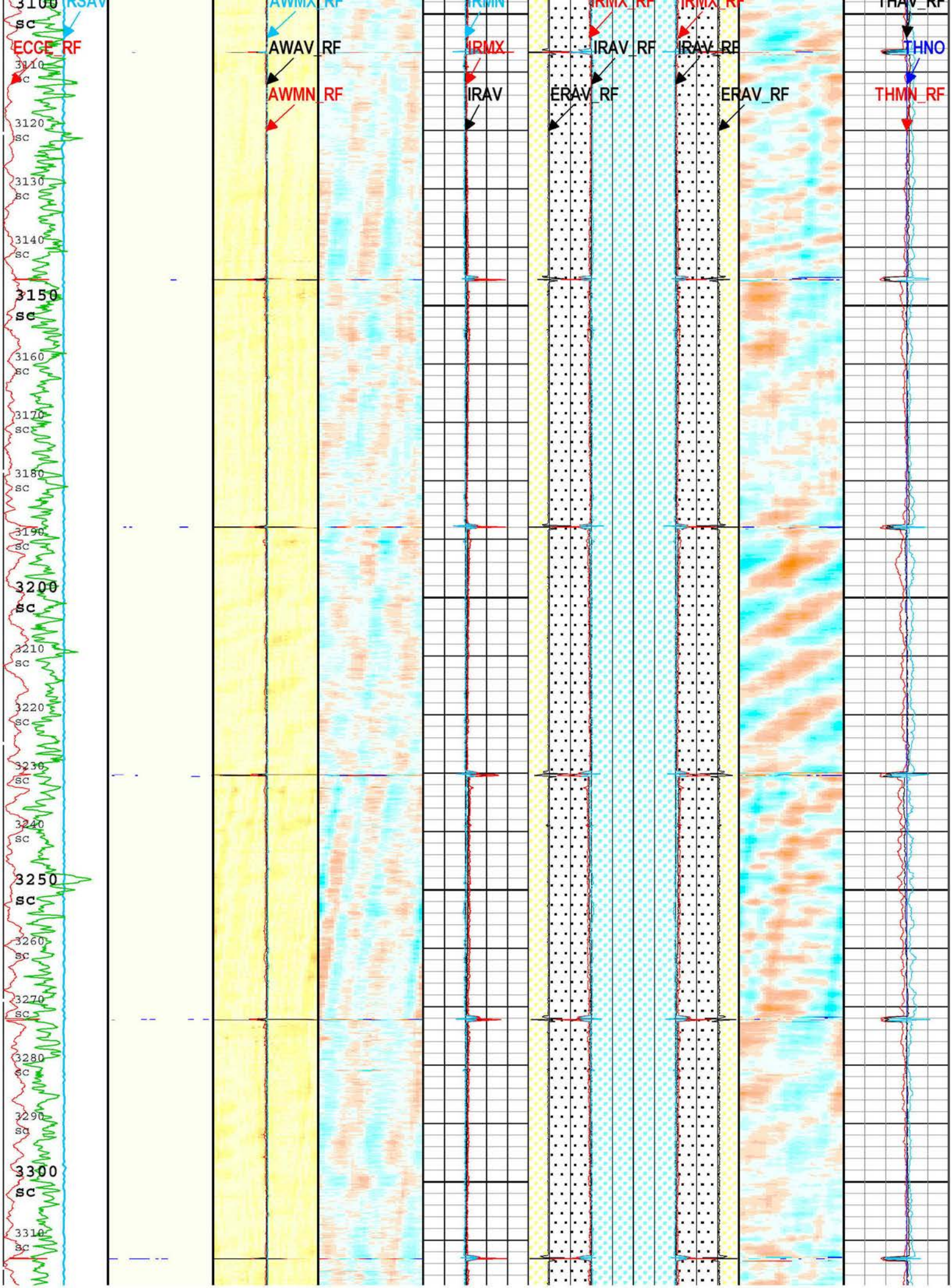
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


2660 sc
2670 sc
2680 sc
2690 sc
2700 sc
2710 sc
2720 sc
2730 sc
2740 sc
2750 sc
2760 sc
2770 sc
2780 sc
2790 sc
2800 sc
2810 sc
2820 sc
2830 sc
2840 sc
2850 sc
2860 sc
2870 sc
HGR
IRSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


2880 sc
2890 sc
2900 sc
2910 sc
2920 sc
2930 sc
2940 sc
2950 sc
2960 sc
2970 sc
2980 sc
2990 sc
3000 sc
3010 sc
3020 sc
3030 sc
3040 sc
3050 sc
3060 sc
3070 sc
3080 sc
EHGR
3090 sc
IRMN_RF
IRMN_RF
THMX_RF


RSAV
ECGE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMX_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRAV_RF
ERAV_RF
THAV_RF
THNO
THMN_RF
3100 sc
3110 sc
3120 sc
3130 sc
3140 sc
3150 sc
3160 sc
3170 sc
3180 sc
3190 sc
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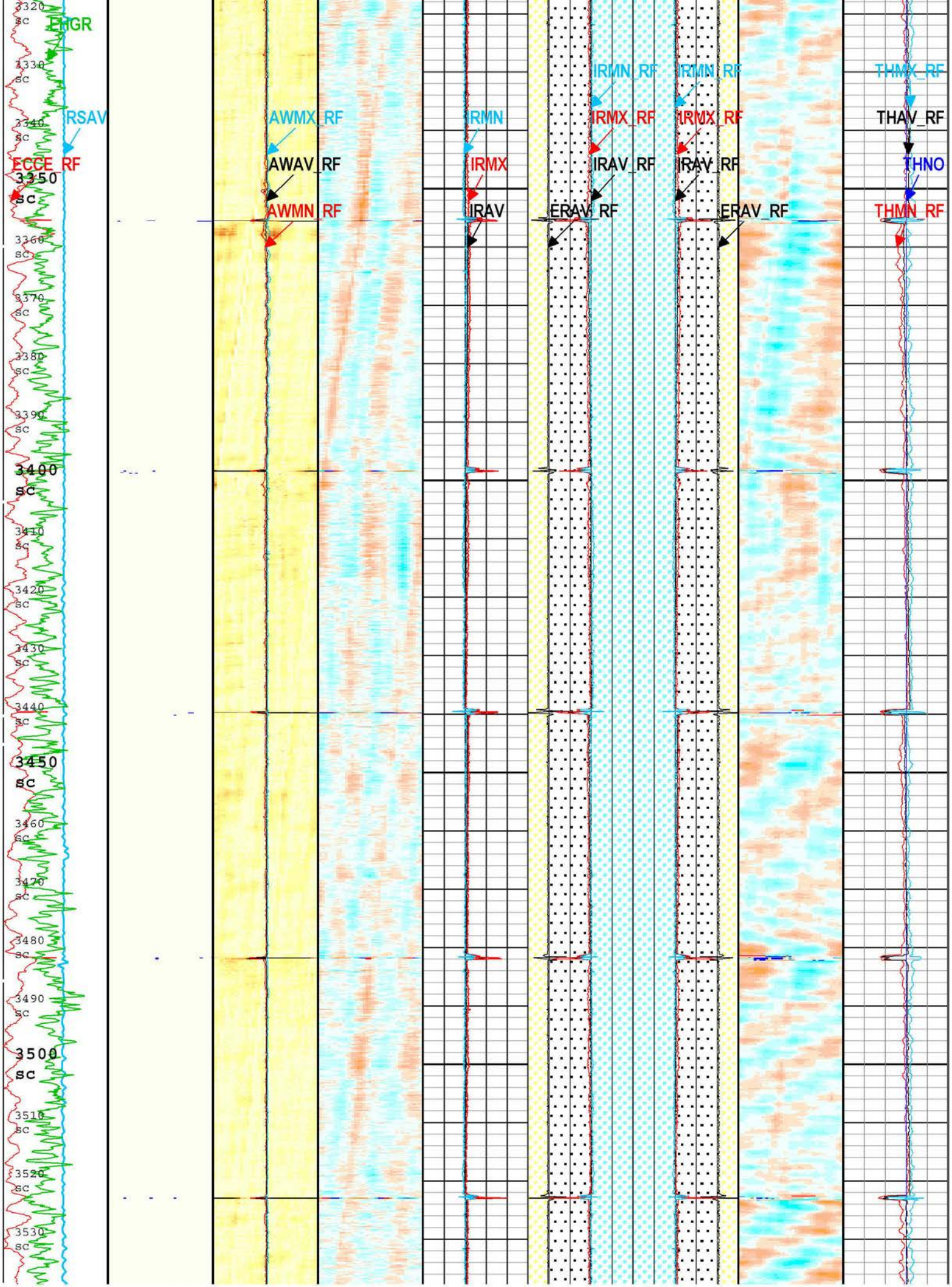
3260 sc
3270 sc
3280 sc
3290 sc
3300 sc
3310 sc


EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
3320 sc
3330 sc
3340 sc
3350 sc
3360 sc
3370 sc
3380 sc
3390 sc
3400 sc
3410 sc
3420 sc
3430 sc
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3450 sc
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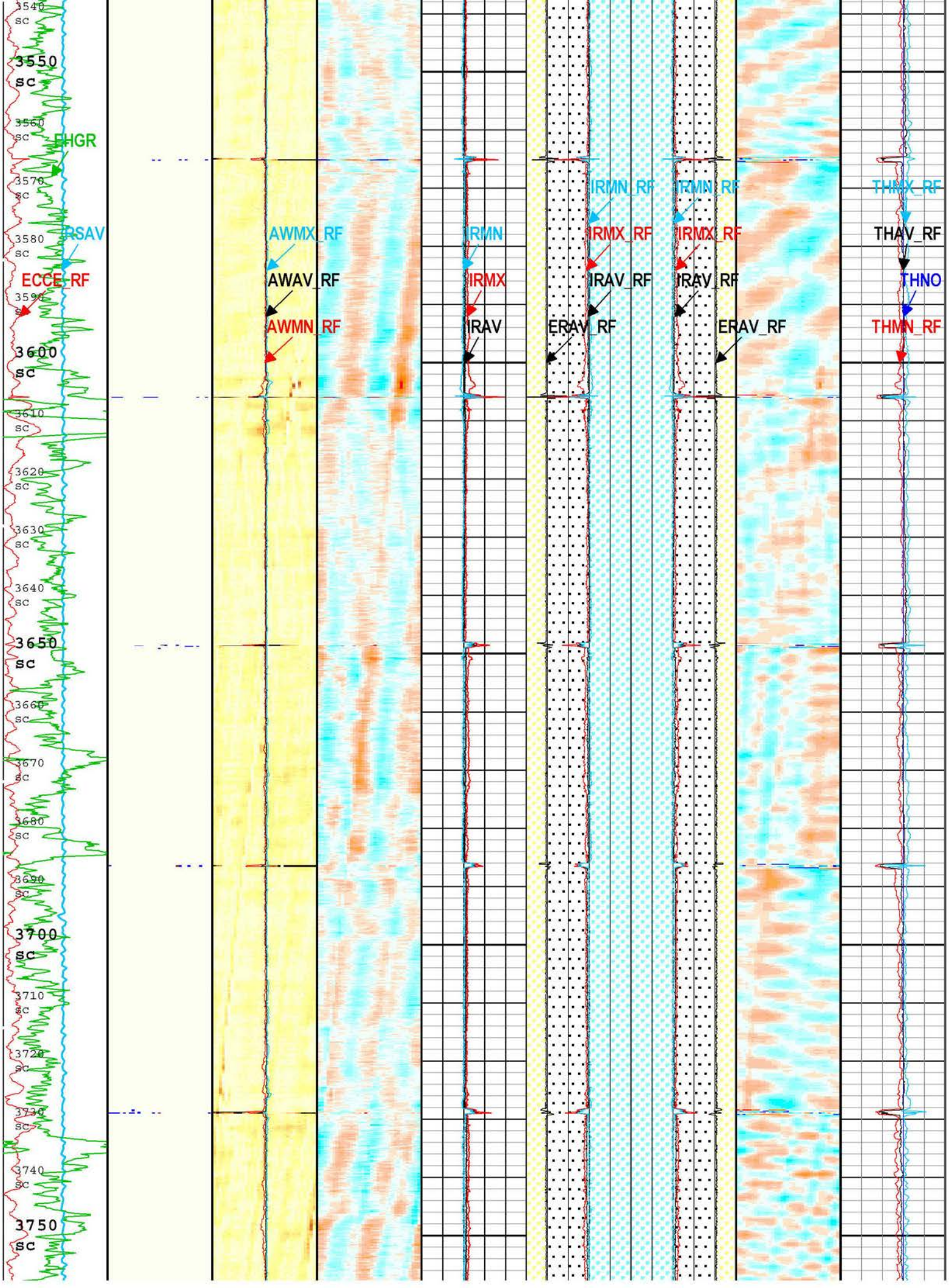
3470 sc
3480 sc
3490 sc
3500 sc
3510 sc
3520 sc
3530 sc


3540 sc
3550 sc
3560 sc
3570 sc
3580 sc
3590 sc
3600 sc
3610 sc
3620 sc
3630 sc
3640 sc
3650 sc
3660 sc
3670 sc
3680 sc
3690 sc
3700 sc
3710 sc
3720 sc
3730 sc
3740 sc
3750 sc
EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
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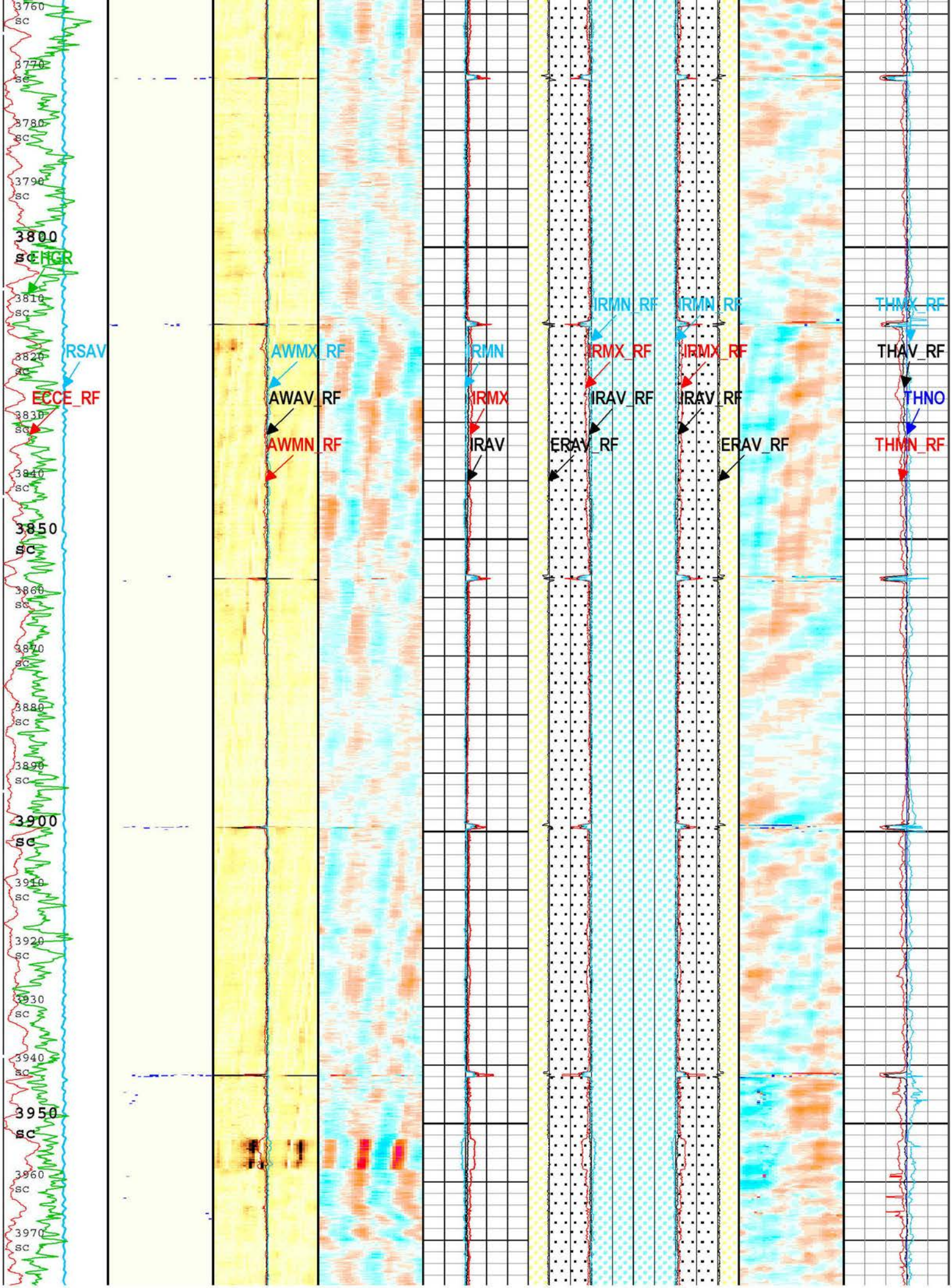
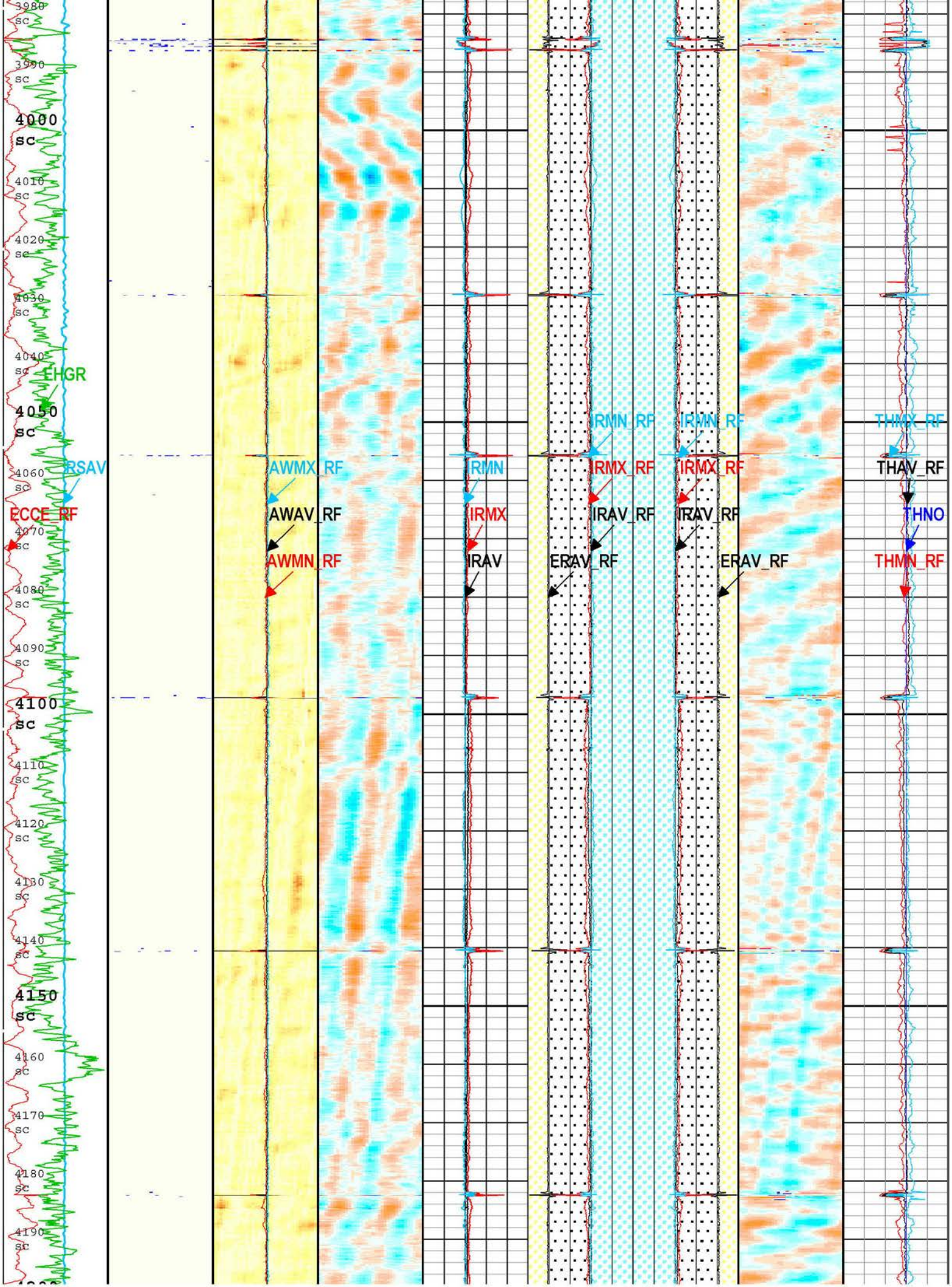
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


3760 sc
3770 sc
3780 sc
3790 sc
3800 sc
EHGR
3810 sc
3820 sc
RSAV
ECCE_RF
3830 sc
3840 sc
3850 sc
3860 sc
3870 sc
3880 sc
3890 sc
3900 sc
3910 sc
3920 sc
3930 sc
3940 sc
3950 sc
3960 sc
3970 sc
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF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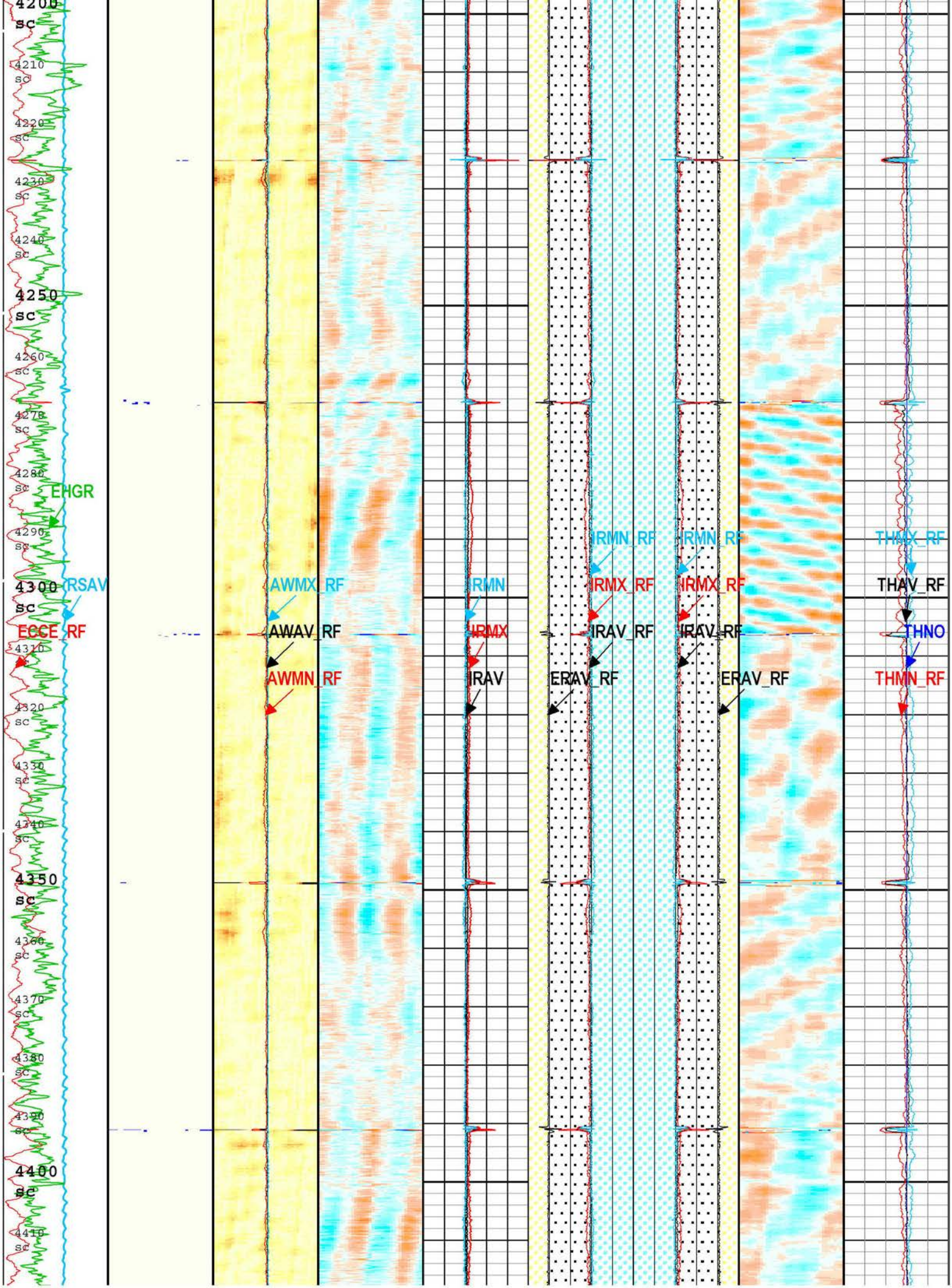
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AWMN_RF
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IRMN_RF
IRMX_RF
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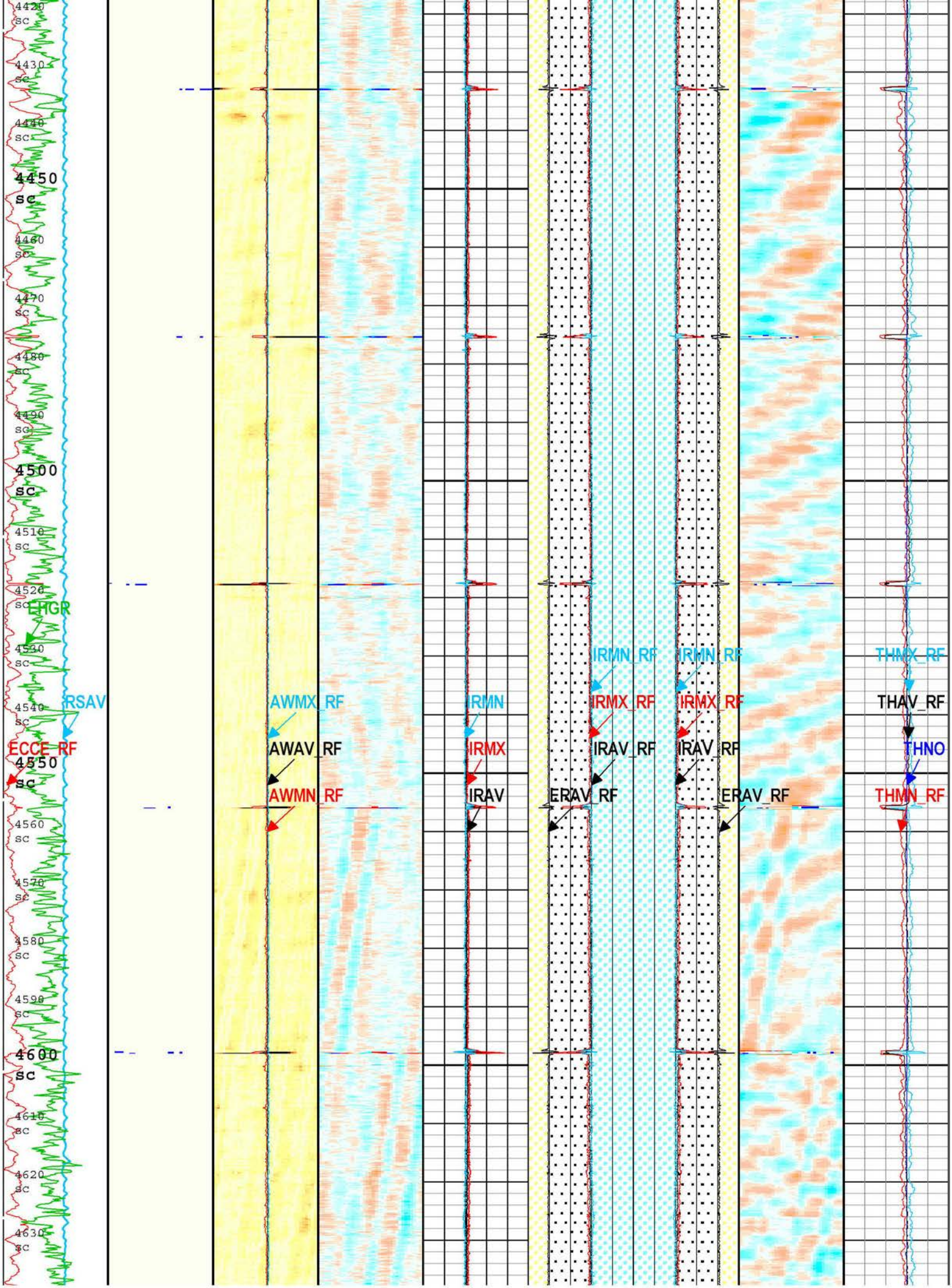
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AWMN_RF
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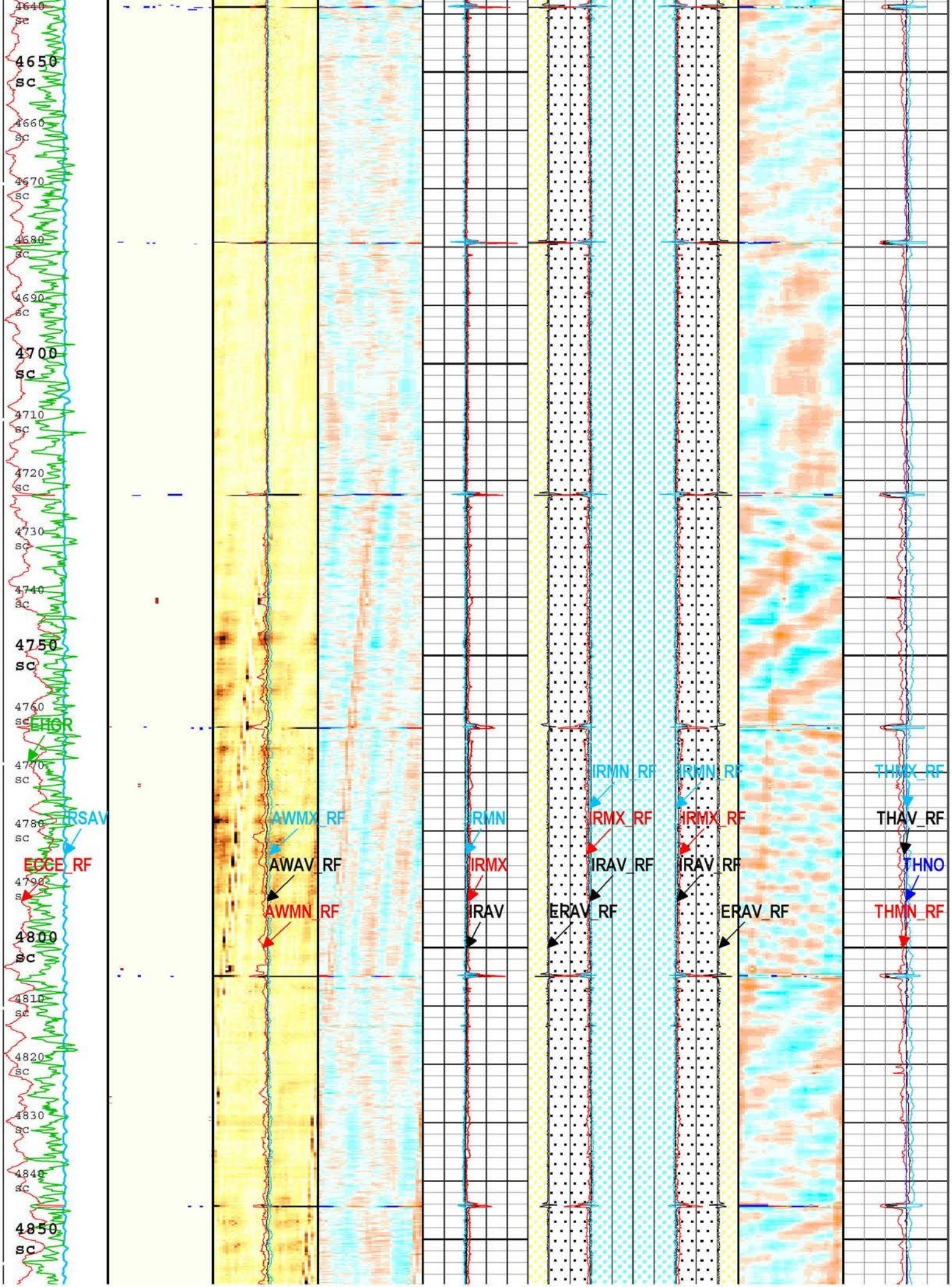
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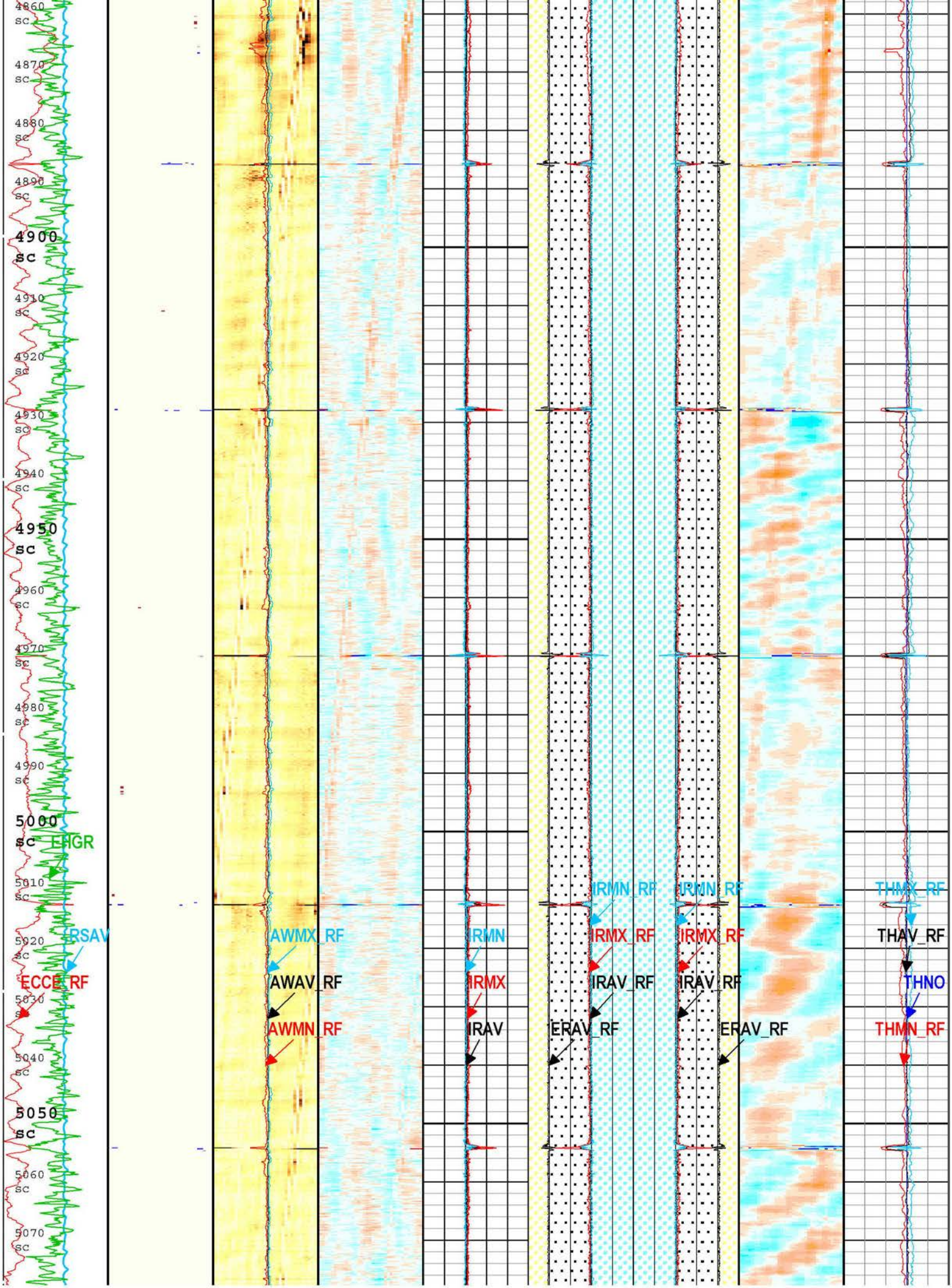
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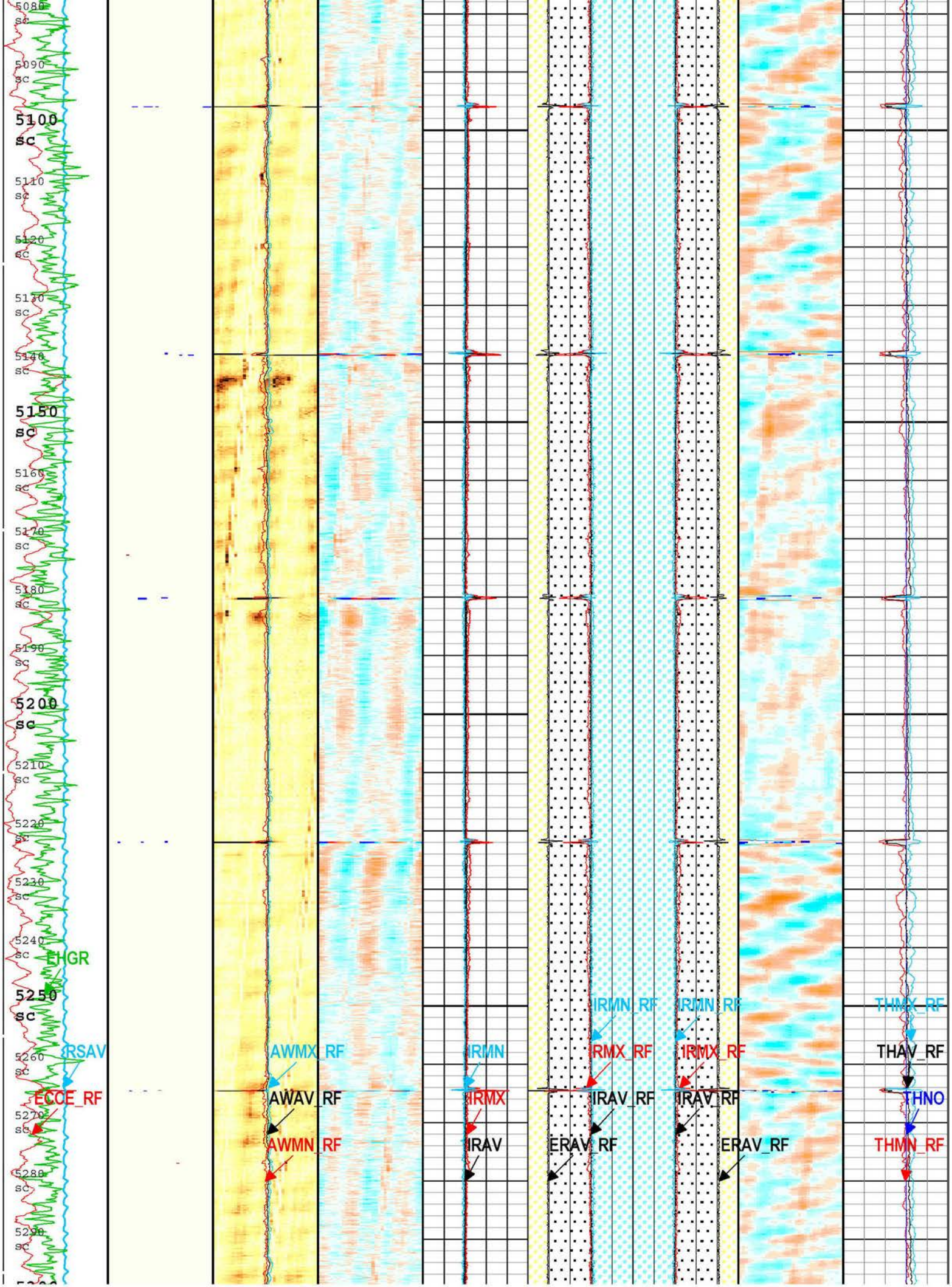
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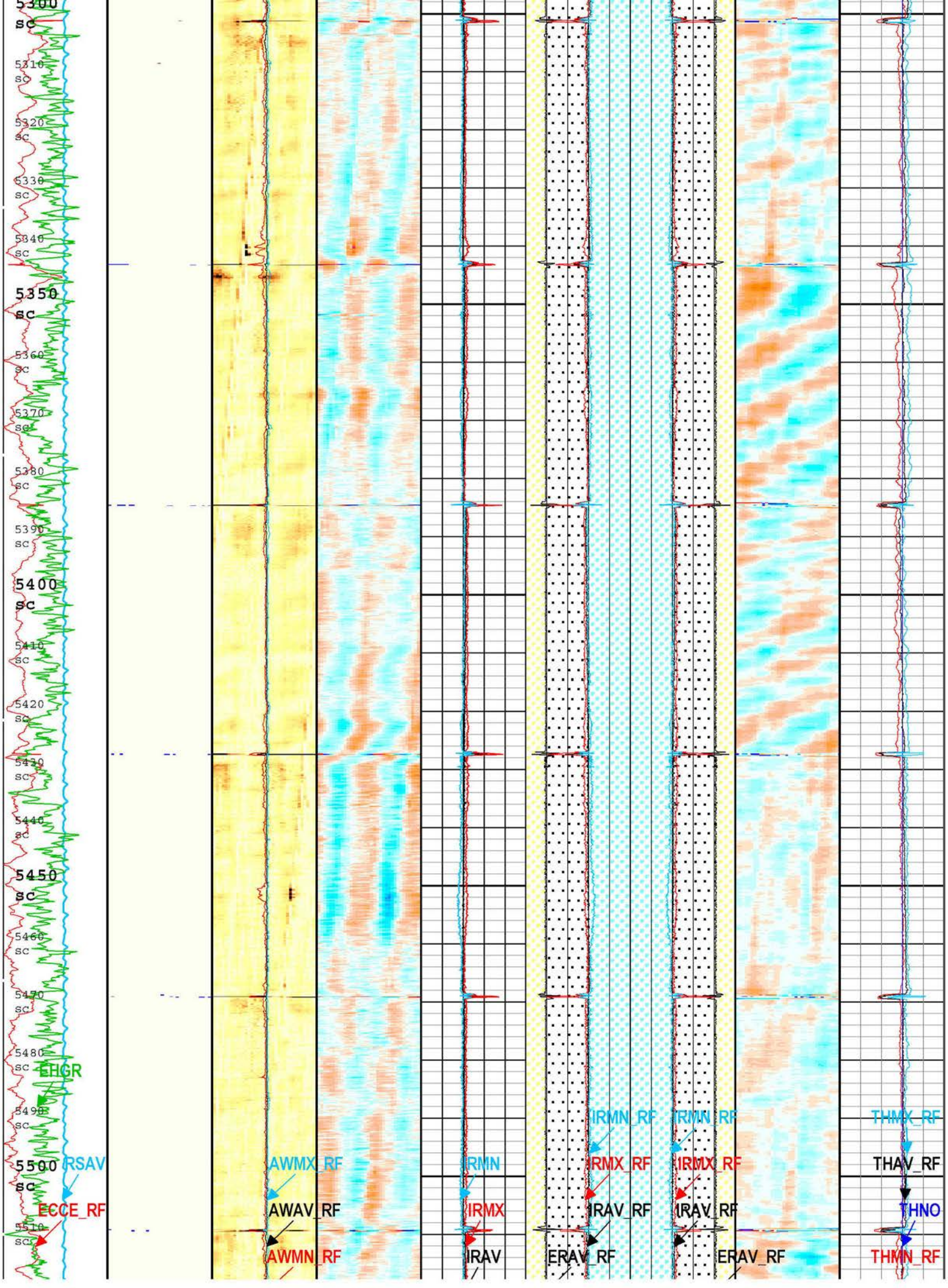
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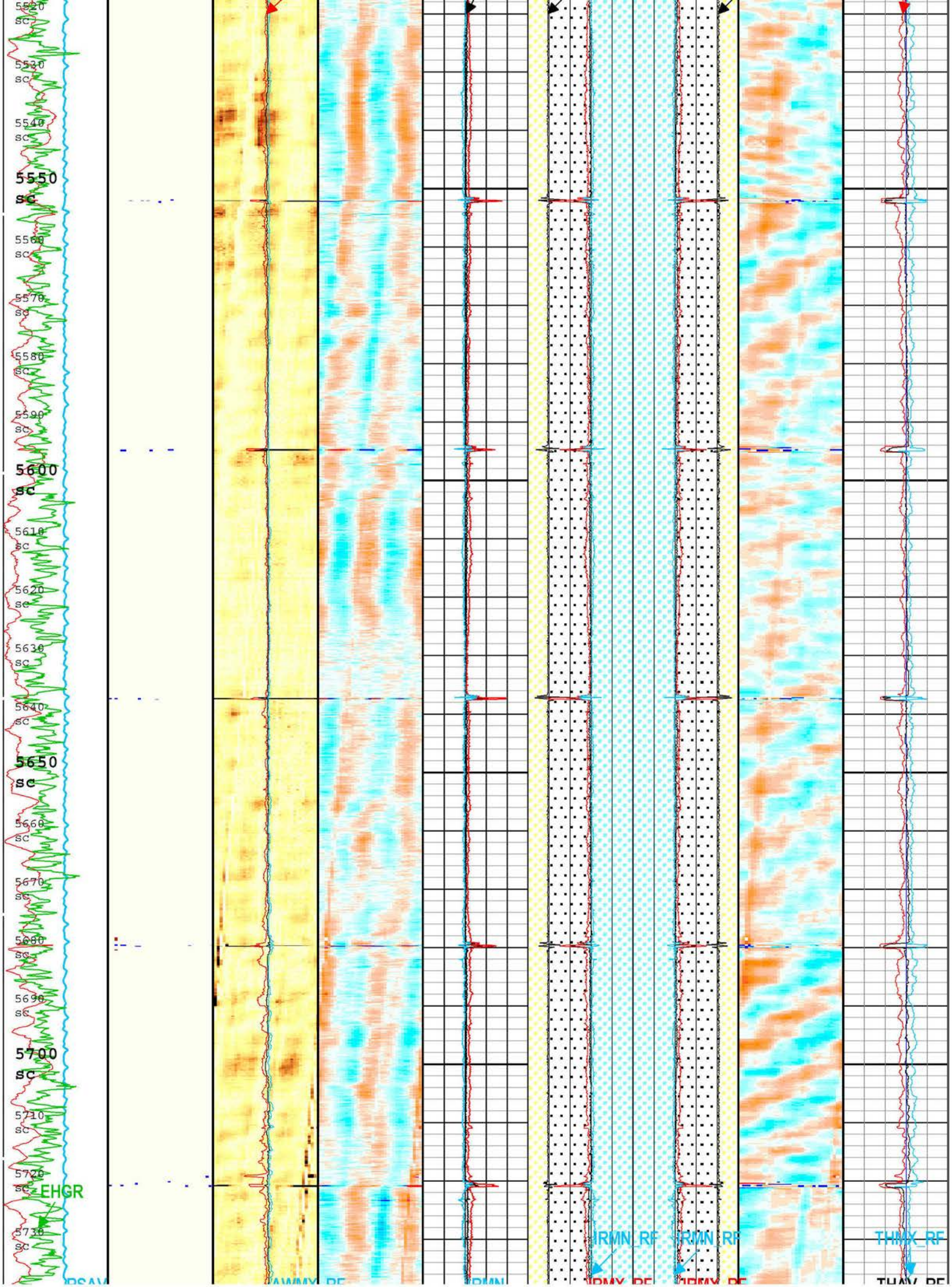
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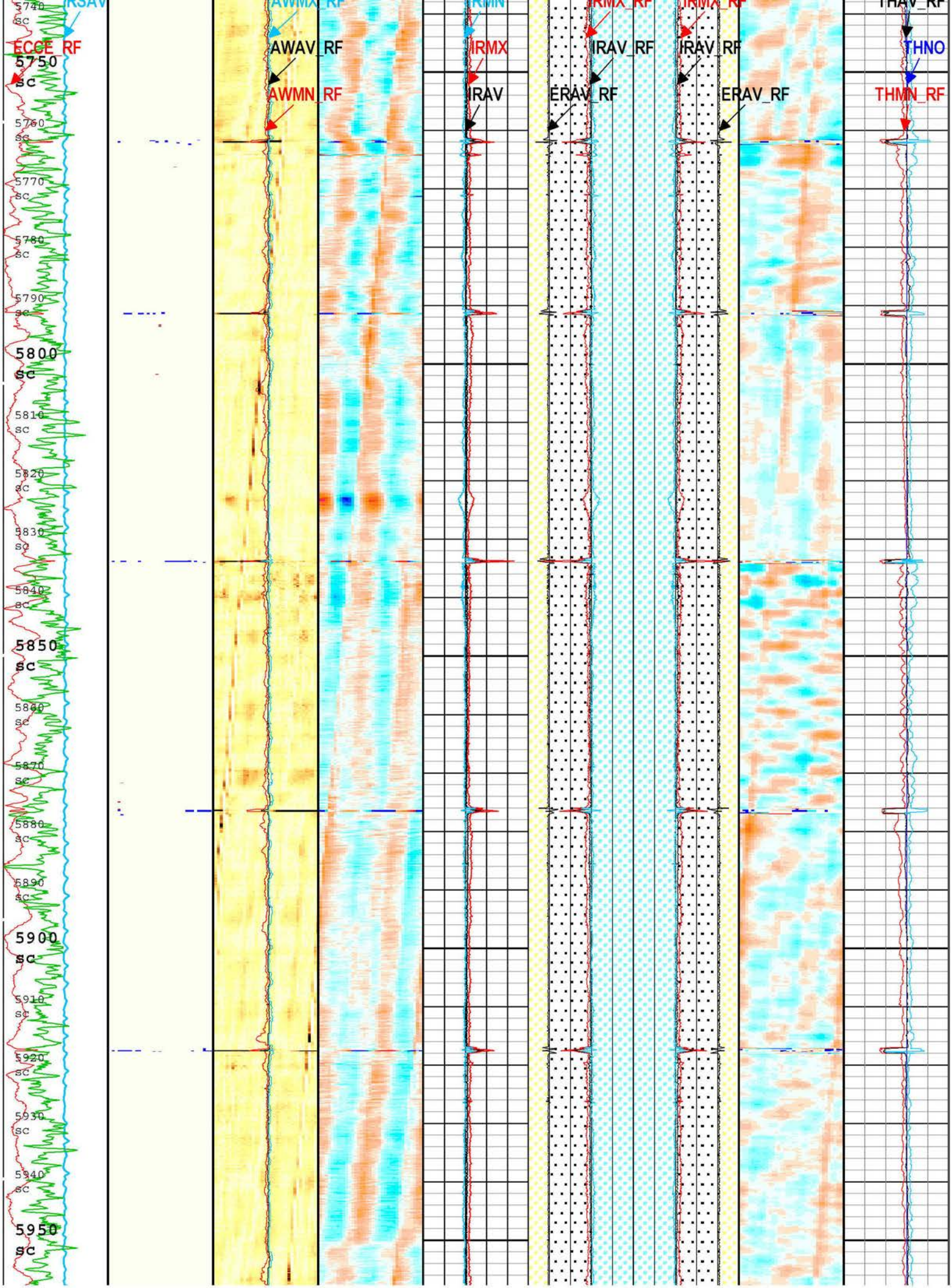
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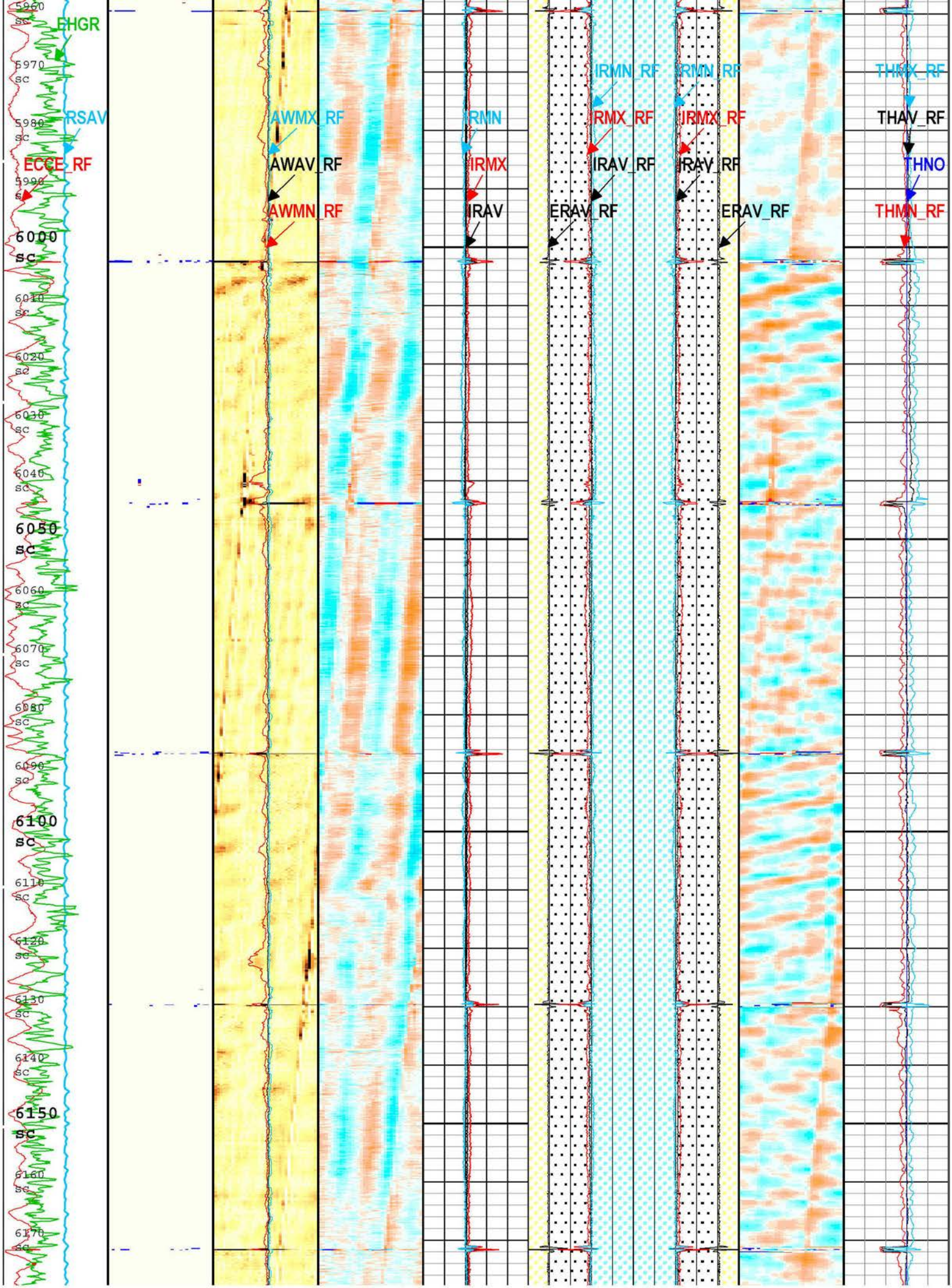
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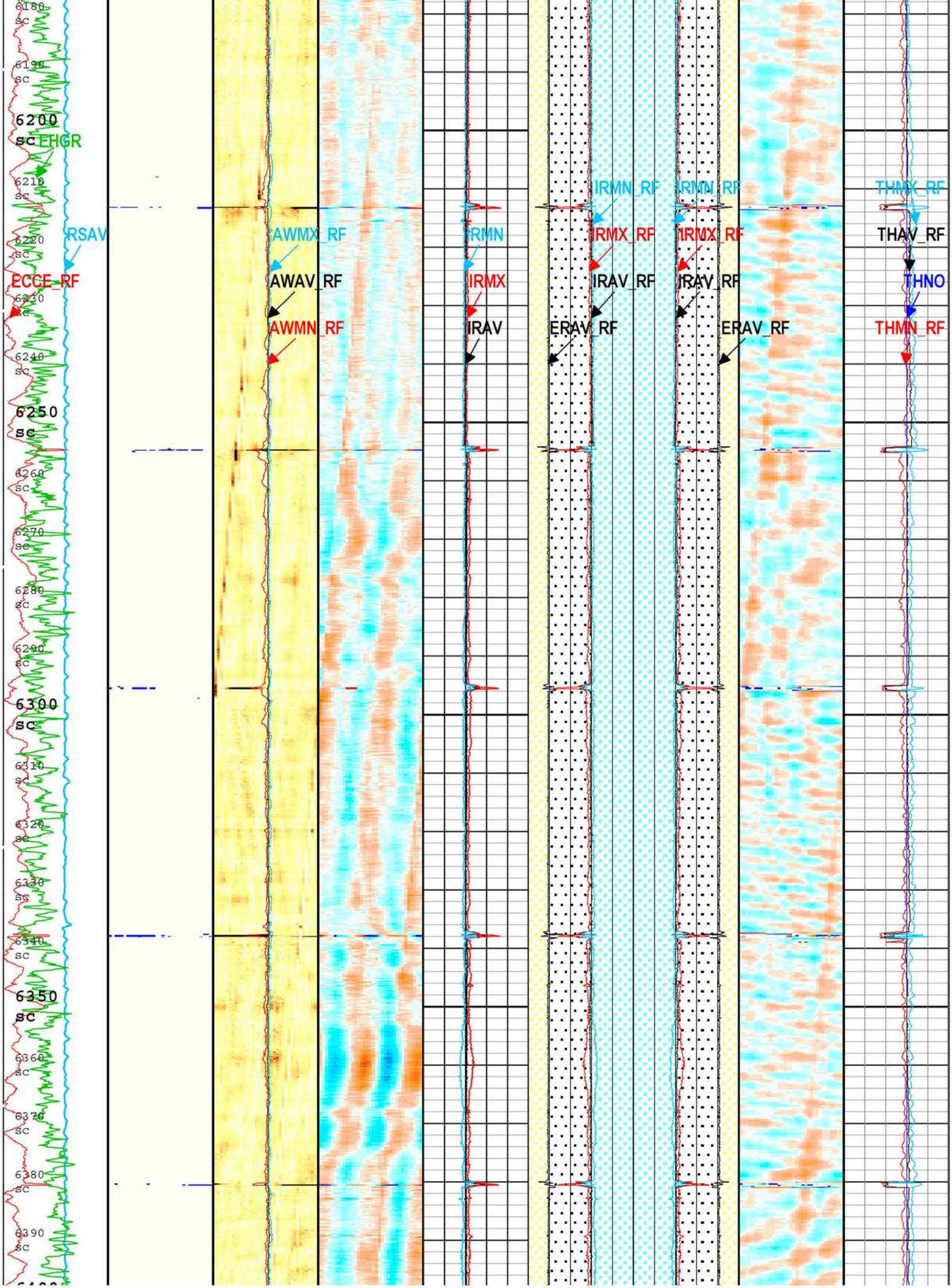
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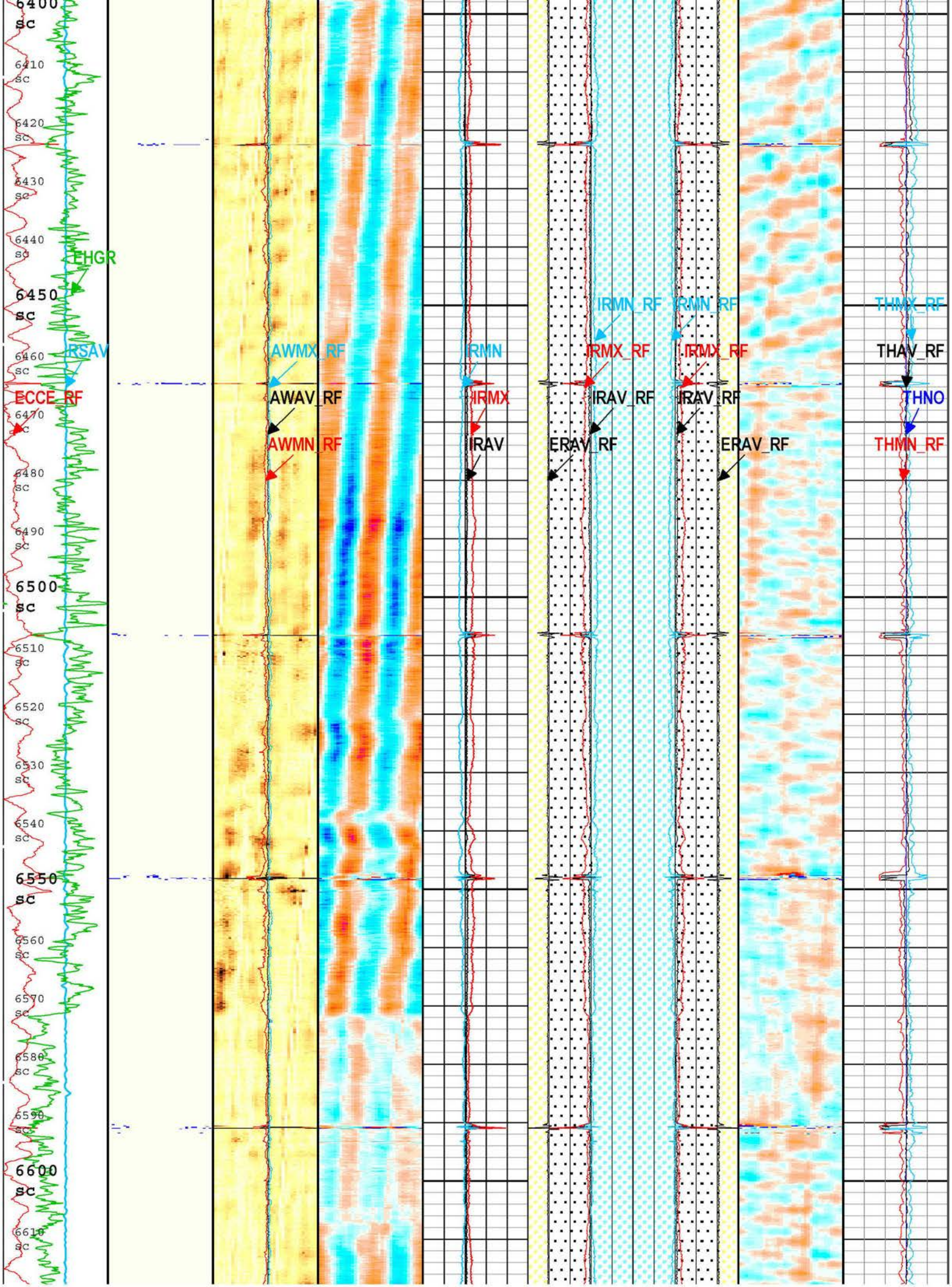
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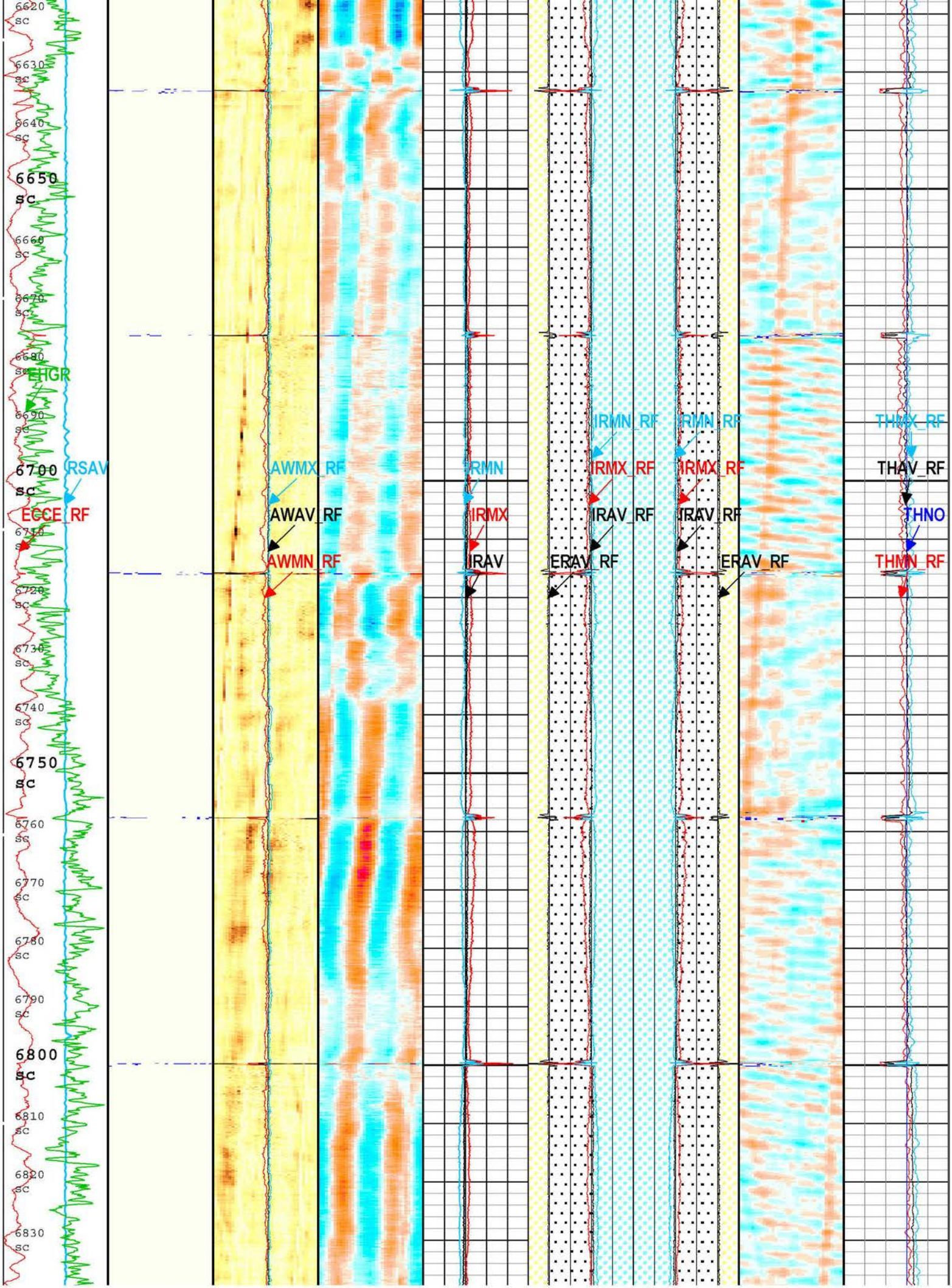
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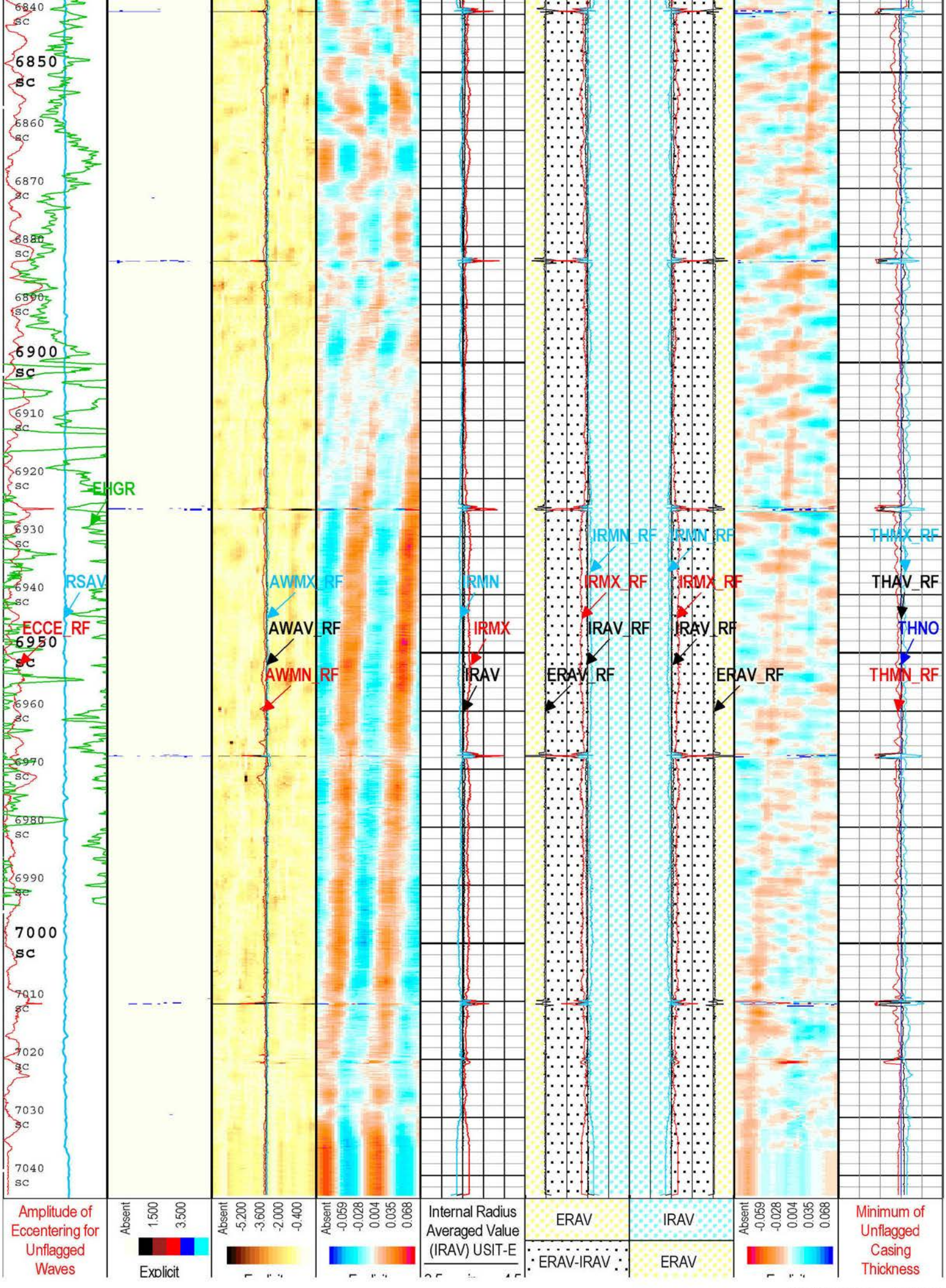
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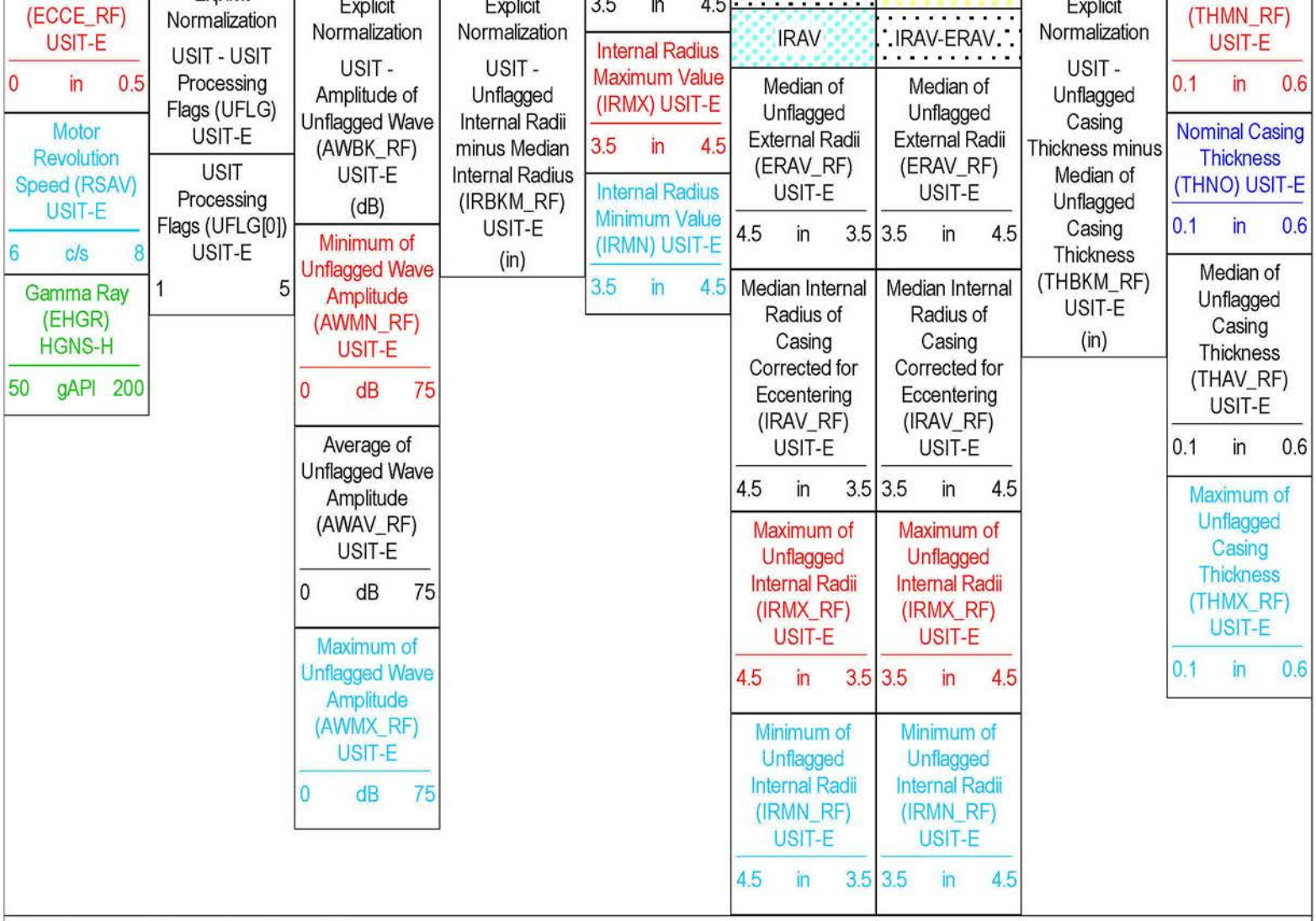
Amplitude of Eccentering for Unflagged Waves
Absent 1.500 3.500
Explicit
Absent -5.200 -3.600 -2.000 -0.400
Absent -0.059 -0.028 0.004 0.035 0.068
Internal Radius Averaged Value (IRAV) USIT-E
ERAV
ERAV-IRAV
IRAV
ERAV
Absent -0.059 -0.028 0.004 0.035 0.068
Minimum of Unflagged Casing Thickness



USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:11:36

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	7331	ft
CDEN	Cement Density	HGNS-H	2.65	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.4	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	Depth Zoned	psi
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	193	us/ft
EDII	EDM Data Interpolation Interval	USIT-E	0	ft

FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	24.96	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	65	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Centered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.68	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	17.5	10	832
BS	11	832	7044
CYSTLGR	55000	10	5835
CYSTLGR	80000	5835	7044

All depth are actual.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	80	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7030	ft
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	59.63	us
WINE	Window End Time	USIT-E	99.63	us

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	4.12 ft	7044.38 ft	02-Jun-2017 1:27:12 AM	02-Jun-2017 4:20:07 AM	ON	4.20 ft	Yes

All depths are referenced to toolstring zero

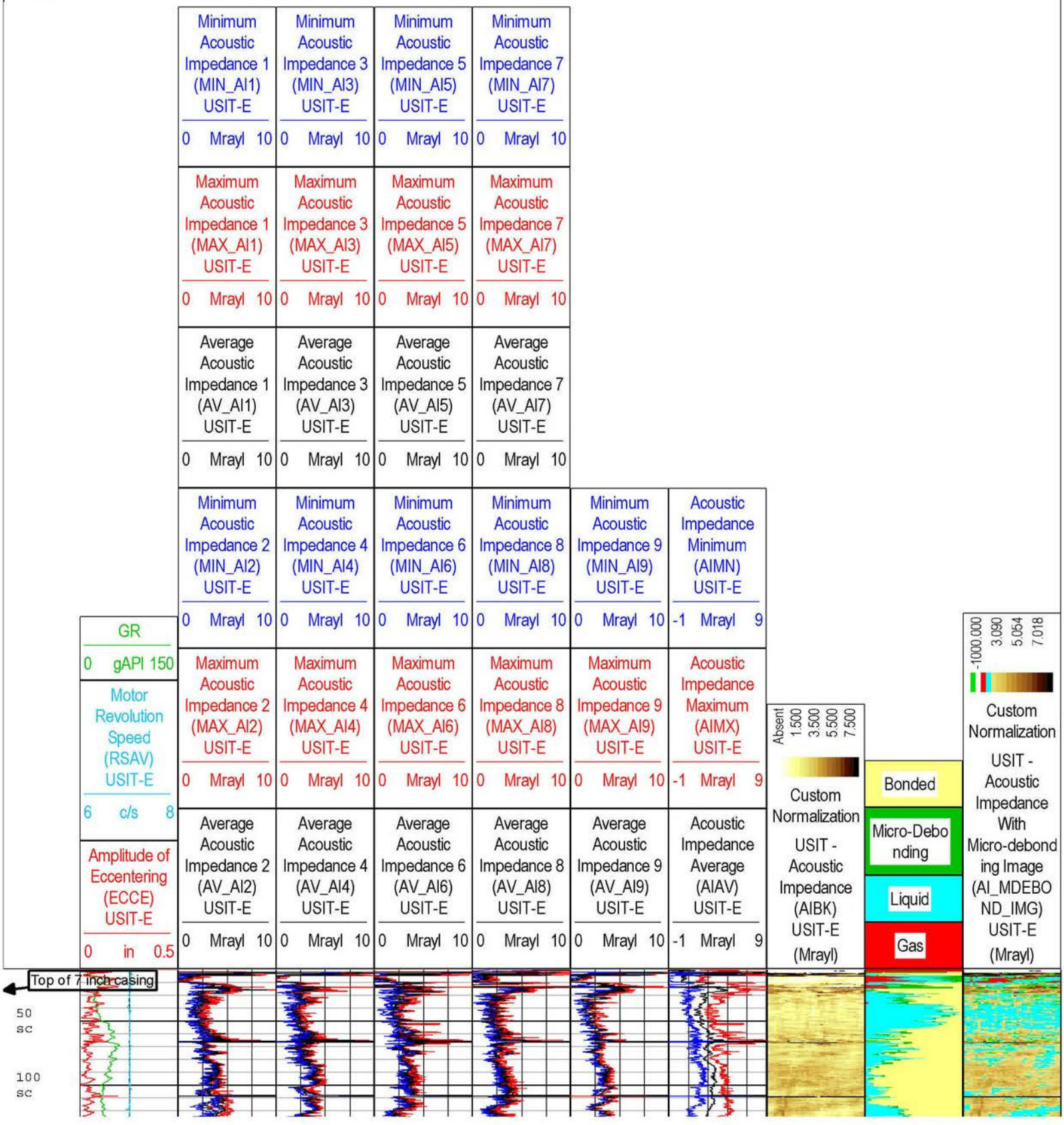
Log

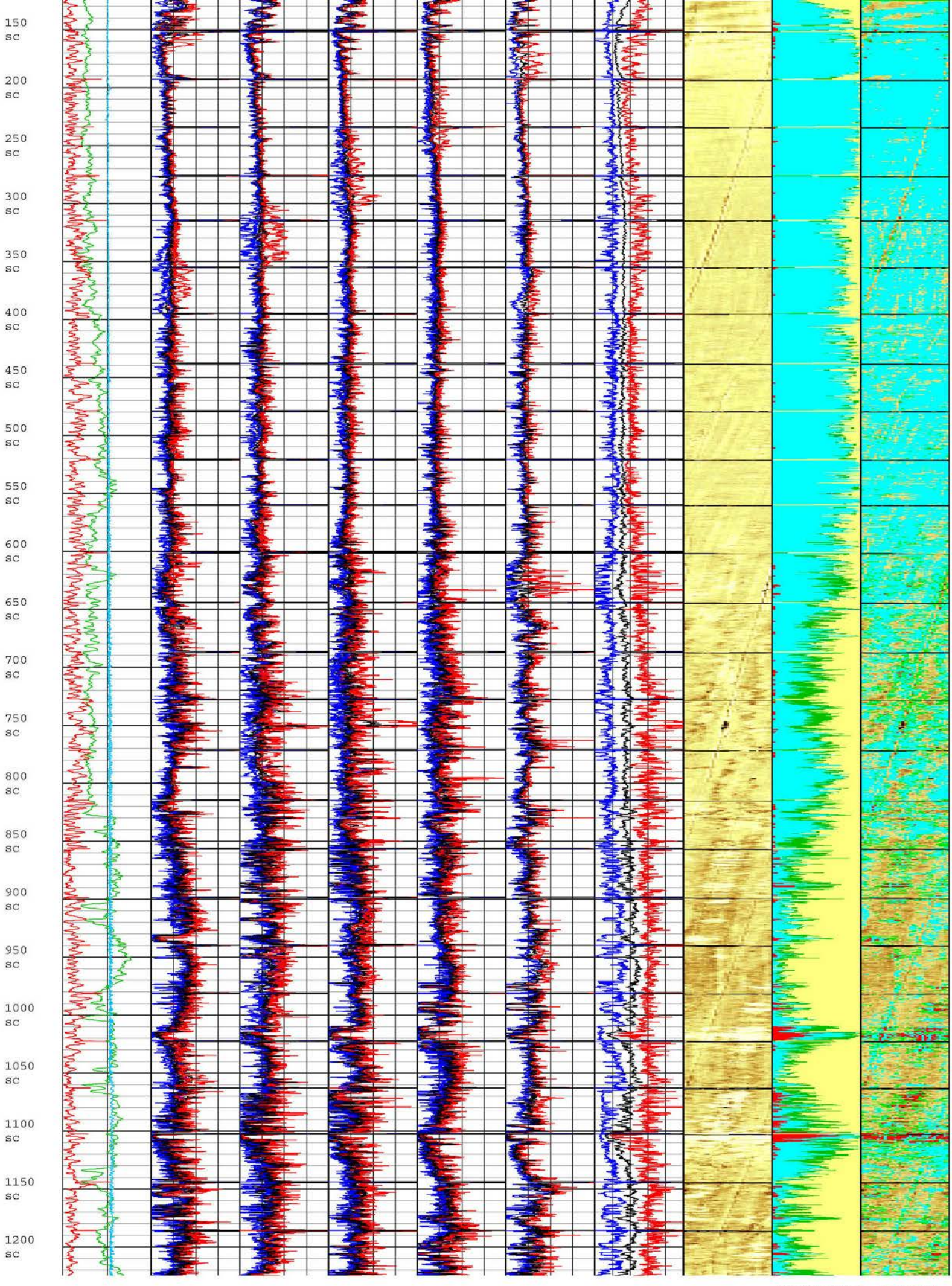
Company:Southern California Gas Company Well:Fernando Fee 35B

One: Log[4]:Up:S011

Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 17-Jul-2017 14:11:47

TIME_1900 - Time Marked every 60.00 (s)

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1100
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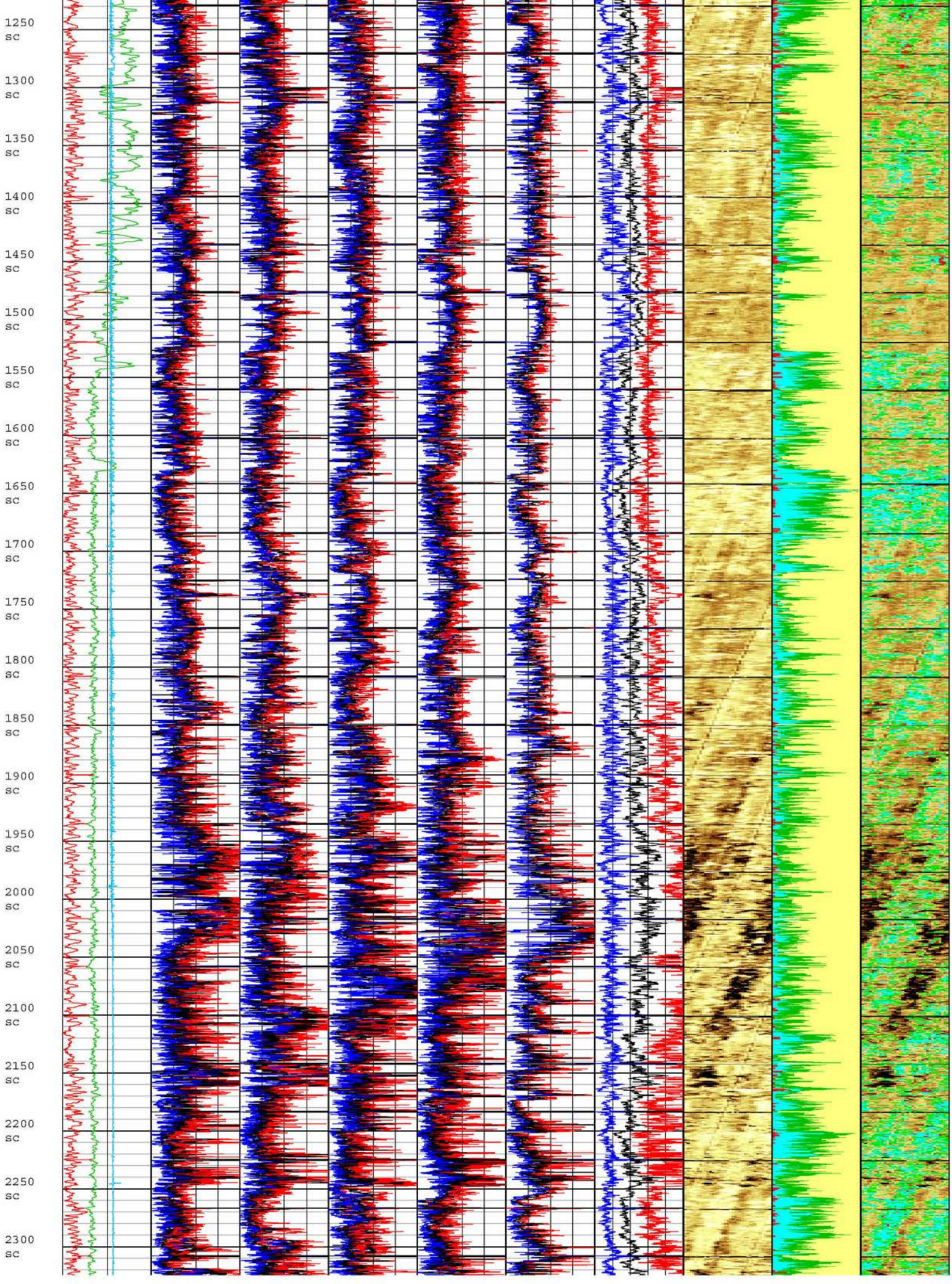
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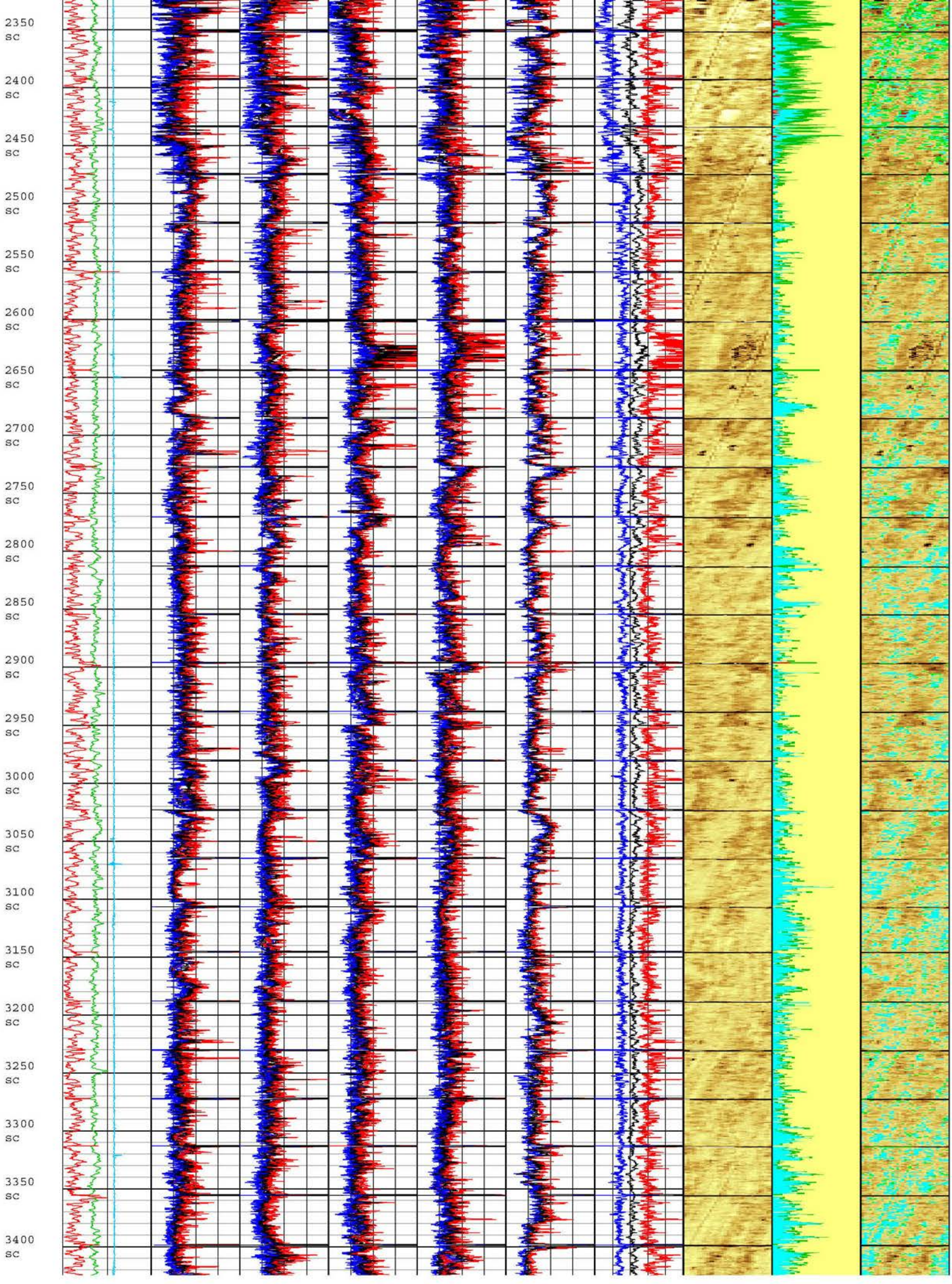
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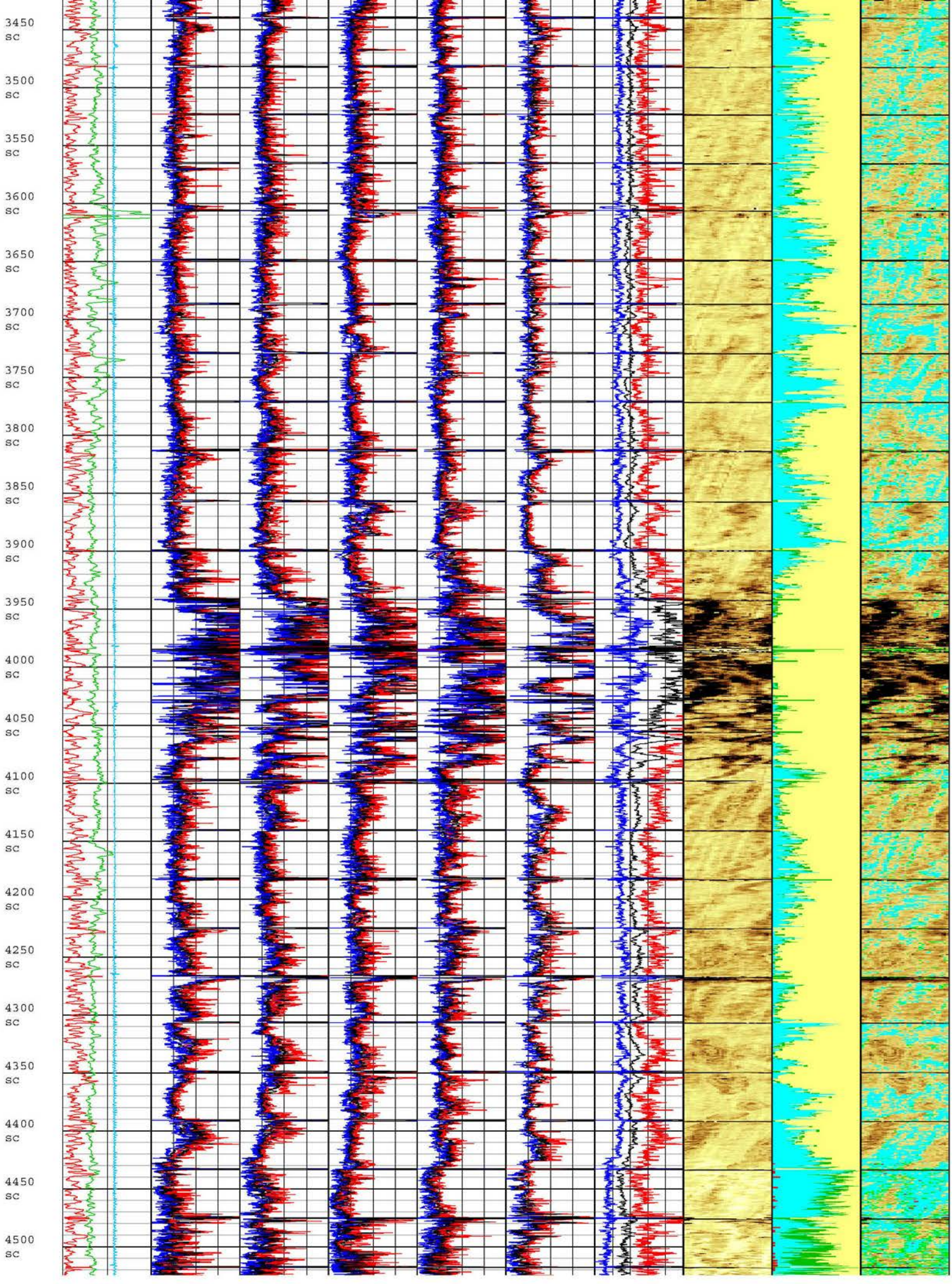
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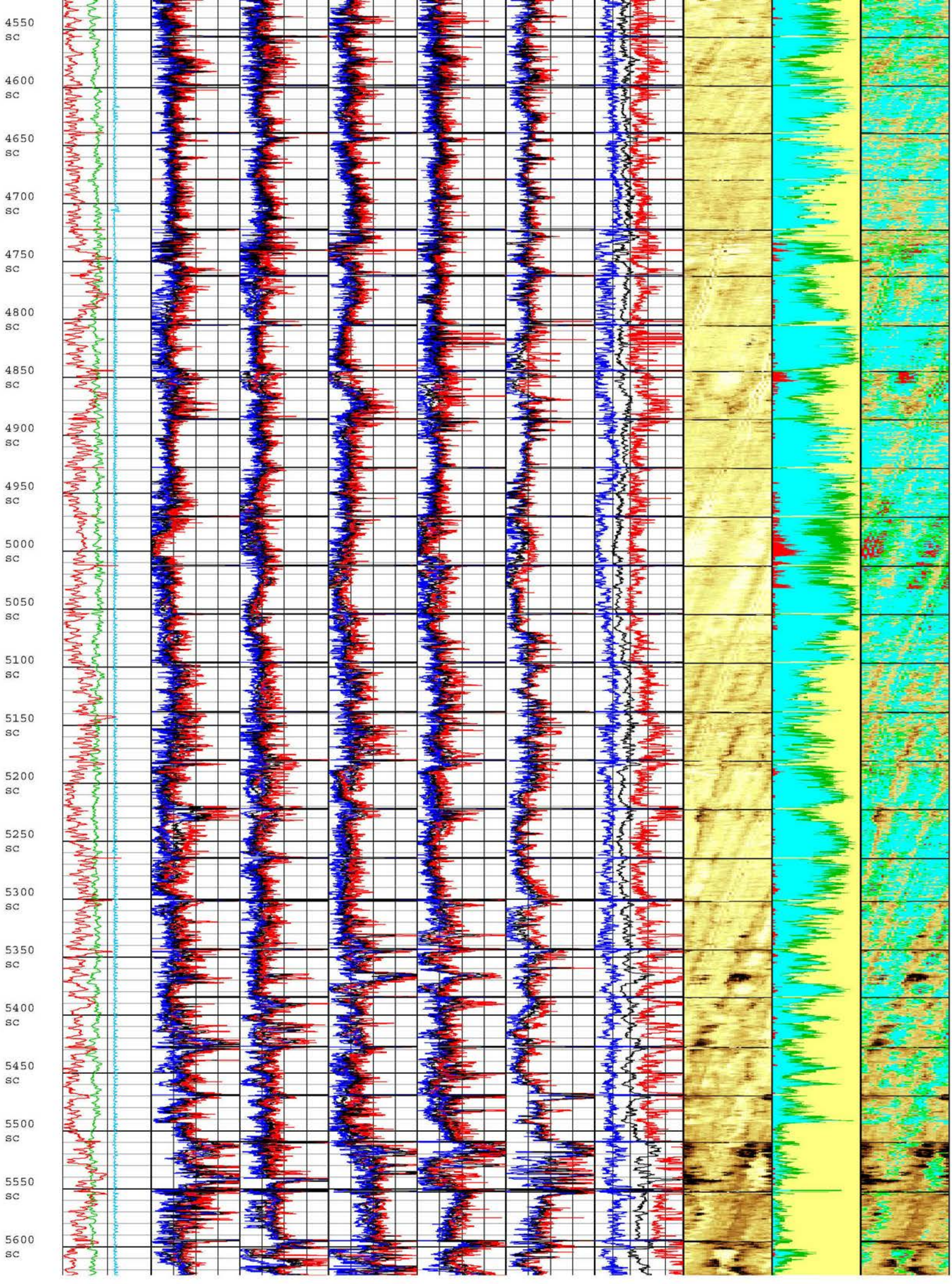
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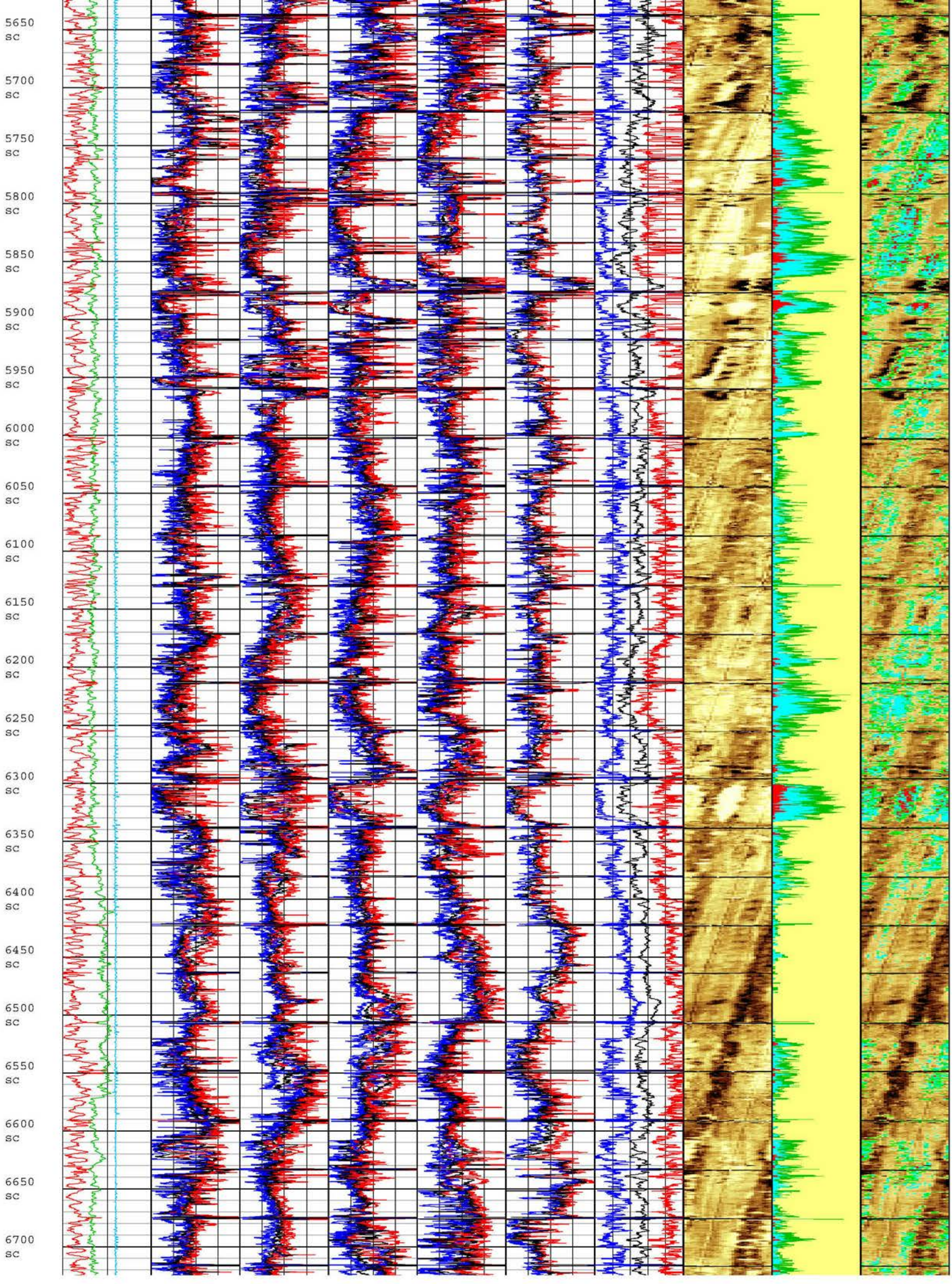
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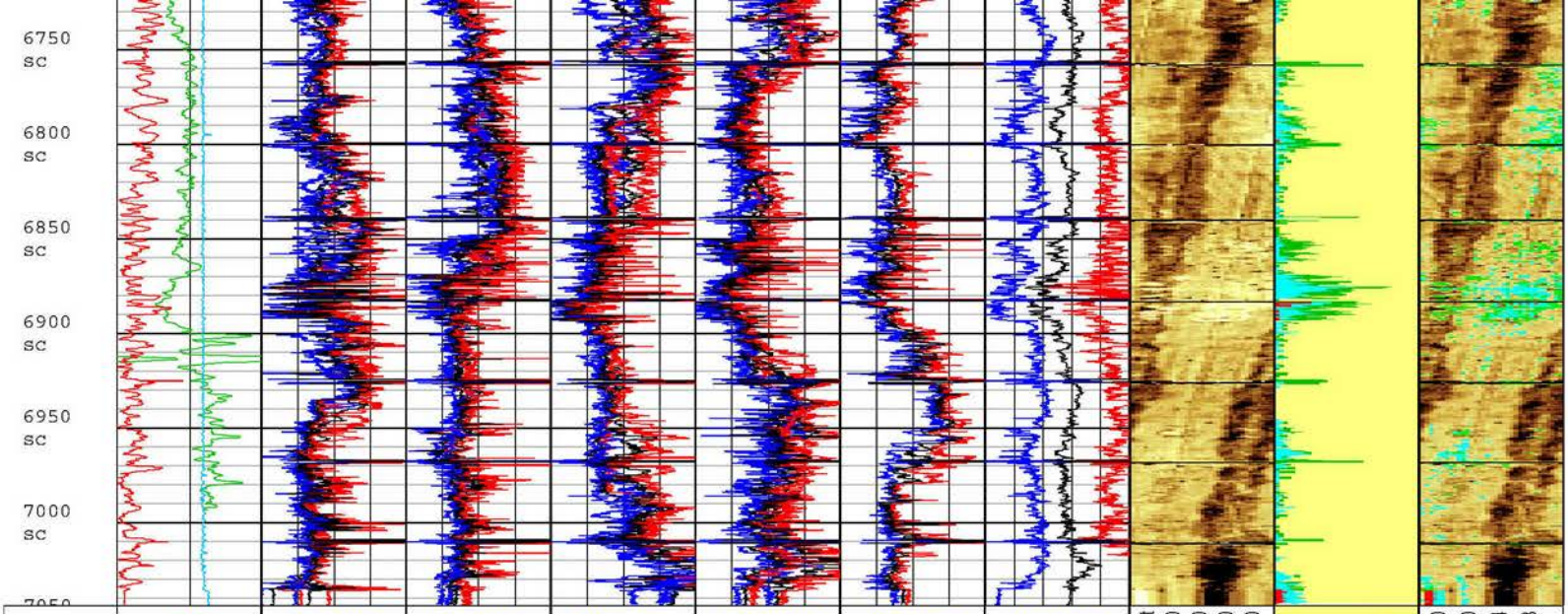


GR 0 gAPI 150	Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E 0 Mrayl 10	Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E 0 Mrayl 10	Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E 0 Mrayl 10	Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E 0 Mrayl 10	Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E 0 Mrayl 10	Acoustic Impedance Minimum (AIMN) USIT-E -1 Mrayl 9	Absent 1.500 3.500 5.500 7.500 Custom Normalization USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	Bonded Micro-Debonding Liquid Gas	-1000.000 3.090 5.054 7.018 Custom Normalization USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)
Motor Revolution Speed (RSAV) USIT-E 6 c/s 8	Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E 0 Mrayl 10	Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E 0 Mrayl 10	Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E 0 Mrayl 10	Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E 0 Mrayl 10	Maximum Acoustic Impedance 9 (MAX_AI9) USIT-E 0 Mrayl 10	Acoustic Impedance Maximum (AIMX) USIT-E -1 Mrayl 9			
Amplitude of Eccentering (ECCE) USIT-E 0 in 0.5	Average Acoustic Impedance 1 (AV_AI1) USIT-E 0 Mrayl 10	Average Acoustic Impedance 3 (AV_AI3) USIT-E 0 Mrayl 10	Average Acoustic Impedance 5 (AV_AI5) USIT-E 0 Mrayl 10	Average Acoustic Impedance 7 (AV_AI7) USIT-E 0 Mrayl 10	Average Acoustic Impedance 9 (AV_AI9) USIT-E 0 Mrayl 10	Acoustic Impedance Average (AIAV) USIT-E -1 Mrayl 9			
	Minimum Acoustic Impedance 2 (MIN_AI2) USIT-E 0 Mrayl 10	Minimum Acoustic Impedance 4 (MIN_AI4) USIT-E 0 Mrayl 10	Minimum Acoustic Impedance 6 (MIN_AI6) USIT-E 0 Mrayl 10	Minimum Acoustic Impedance 8 (MIN_AI8) USIT-E 0 Mrayl 10					
	Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E 0 Mrayl 10	Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E 0 Mrayl 10	Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E 0 Mrayl 10	Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E 0 Mrayl 10					
	Average Acoustic Impedance 2 (AV_AI2) USIT-E 0 Mrayl 10	Average Acoustic Impedance 4 (AV_AI4) USIT-E 0 Mrayl 10	Average Acoustic Impedance 6 (AV_AI6) USIT-E 0 Mrayl 10	Average Acoustic Impedance 8 (AV_AI8) USIT-E 0 Mrayl 10					

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 17-Jul-2017 14:11:47

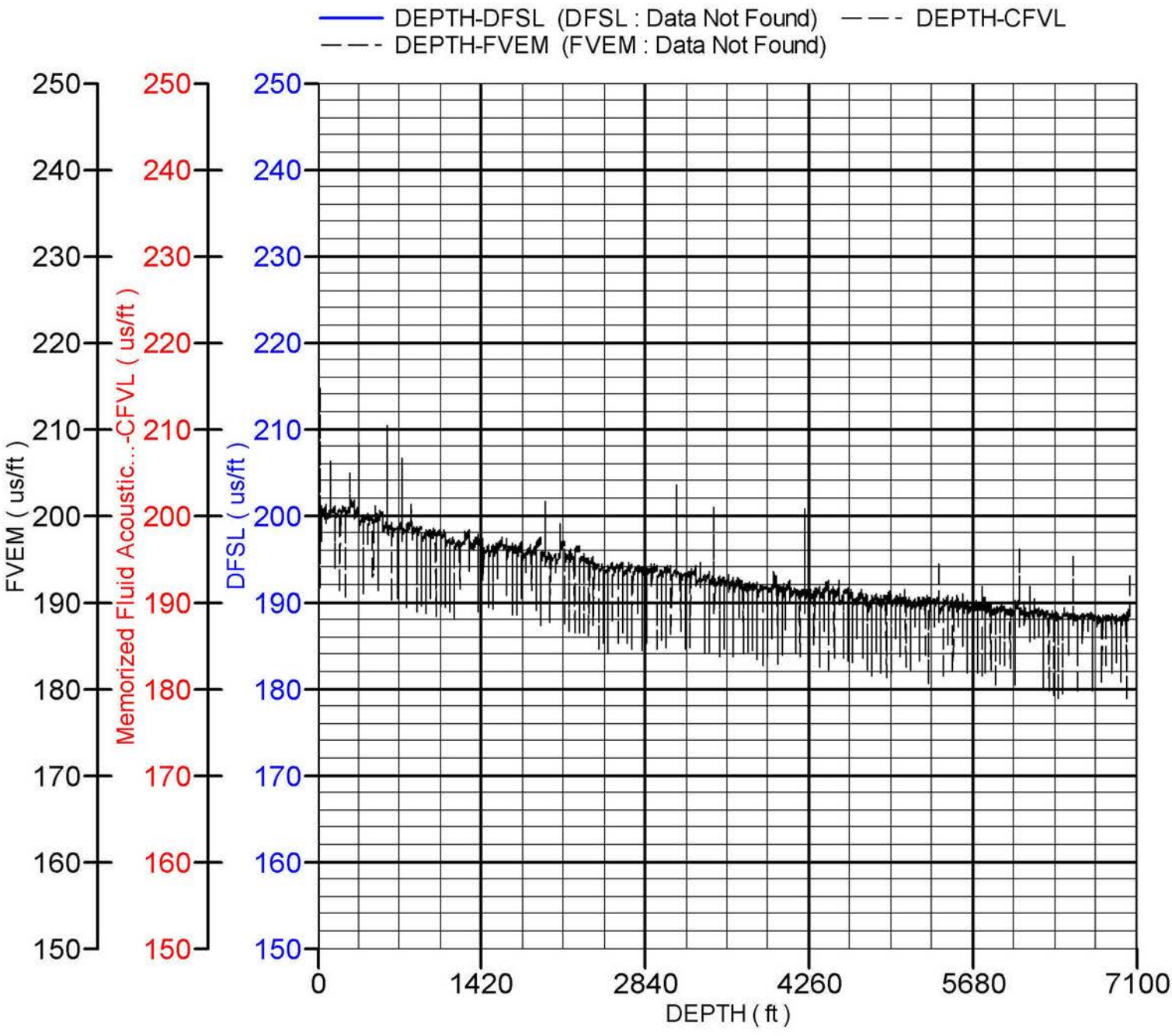
XYZ

Company:Southern California Gas Company Well:Fernando Fee 35B
One: Log[4]:Up:S011

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 7044.50 to 3.75 ft



XYZ

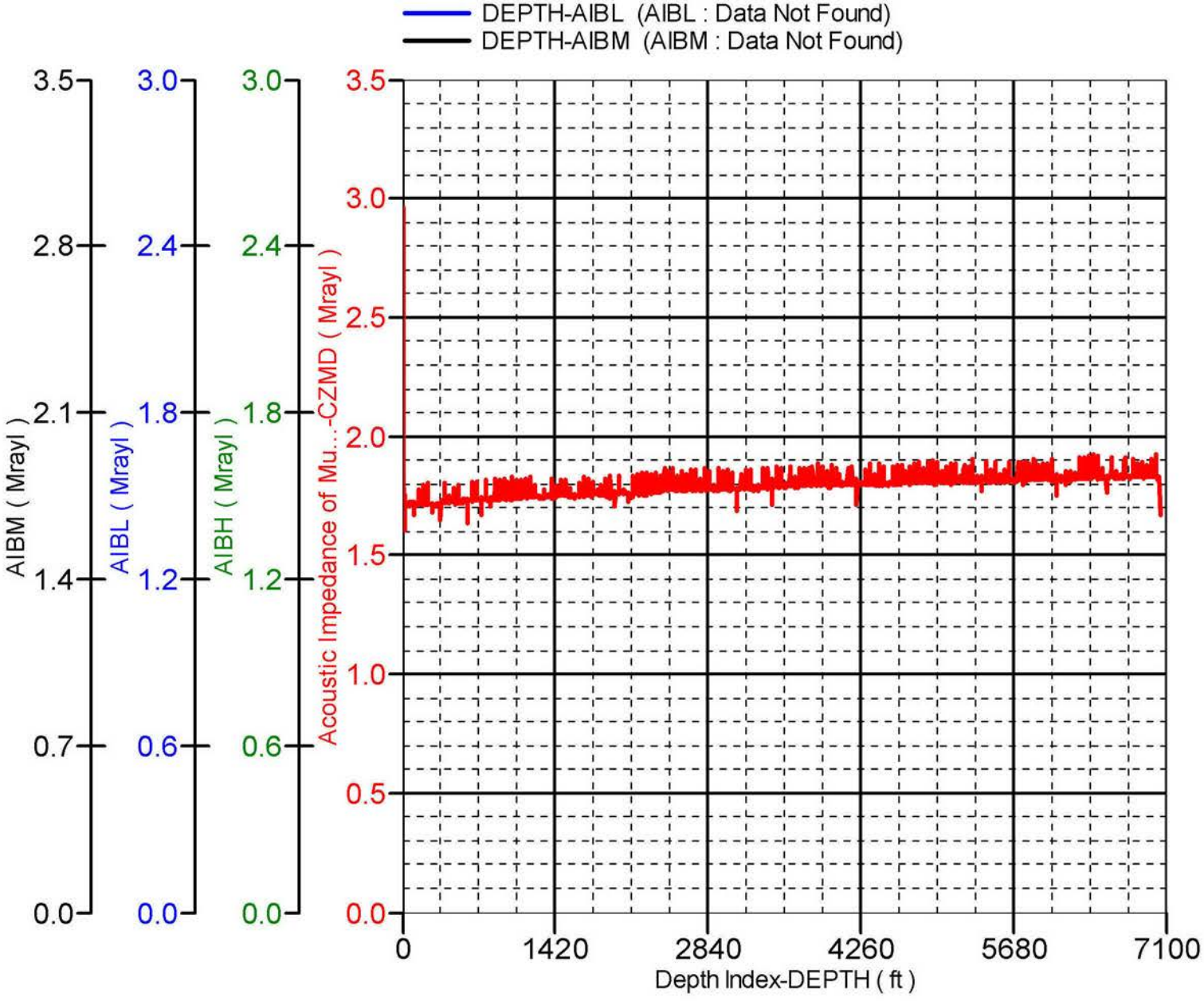
Company:Southern California Gas Company Well:Fernando Fee 35B
One: Log[4]:Up:S011

Theoretical Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 7044.50 to 3.75 ft

DEPTH-CZMD
DEPTH-AIBH (AIBH : Data Not Found)



One

USIT CORROSION 10" = 100'

Software Version

Acquisition System	Version
Maxwell 2017 SP1	7.1.82245.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[8]:Up	Up	3873.88 ft	4368.53 ft	02-Jun-2017 9:19:48 PM	02-Jun-2017 9:47:05 PM	ON	2.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 35B

One: Log[8]:Up:S011

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:11:55

TIME_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - : UTIM Error

2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

Pulse Origin Not Detected
WINLEN Error
Casing Thickness Error
Loop Processing Error

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

Gamma Ray (EHGR) HGNS-H
50 gAPI 200

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0]) USIT-E
1 5

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Internal Radius Averaged Value (IRAV) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

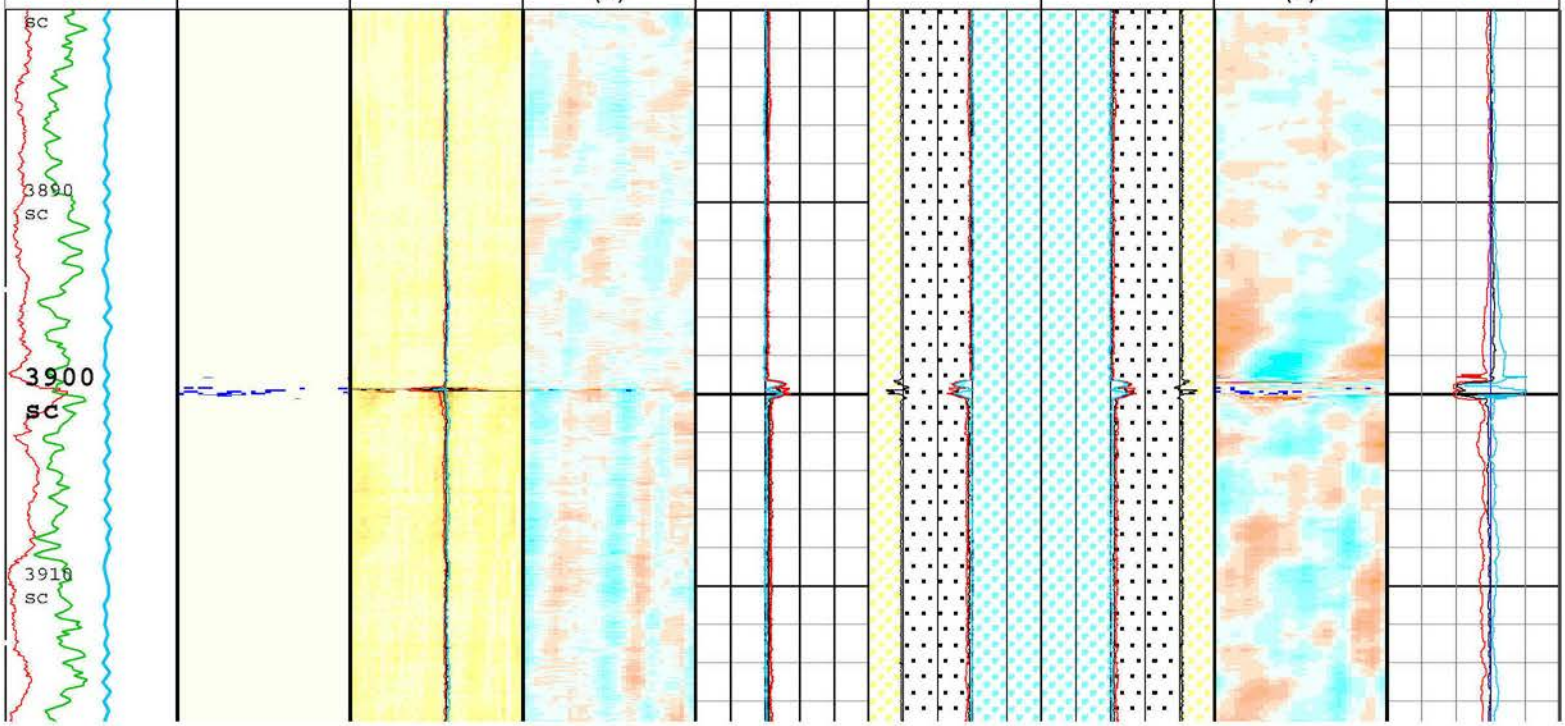
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)

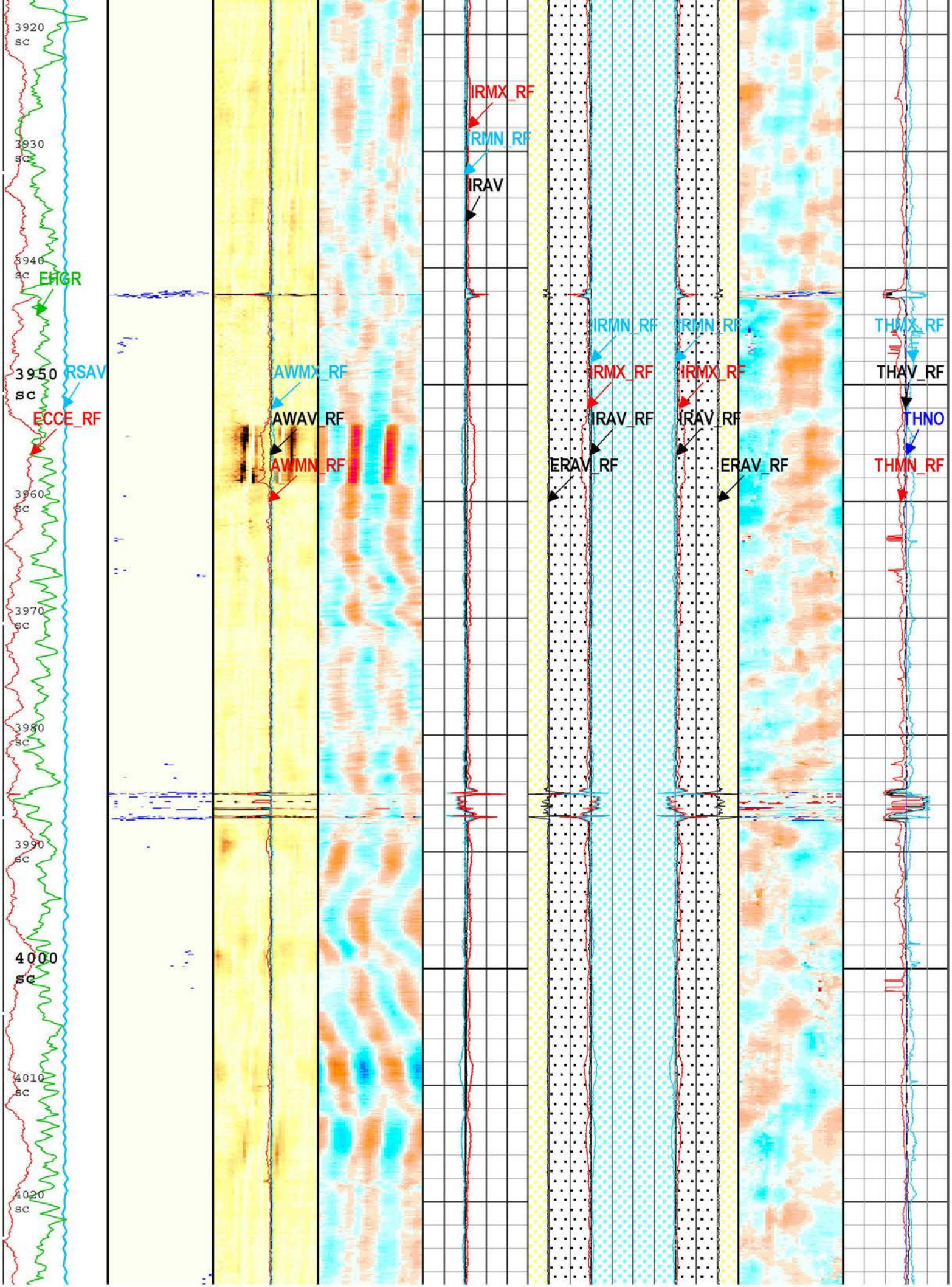
Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

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EHGR
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RSAV
ECCE_RF
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4010 sc
4020 sc
AWMX_RF
AWAV_RF
AWMN_RF
IRMX_RF
IRMN_RF
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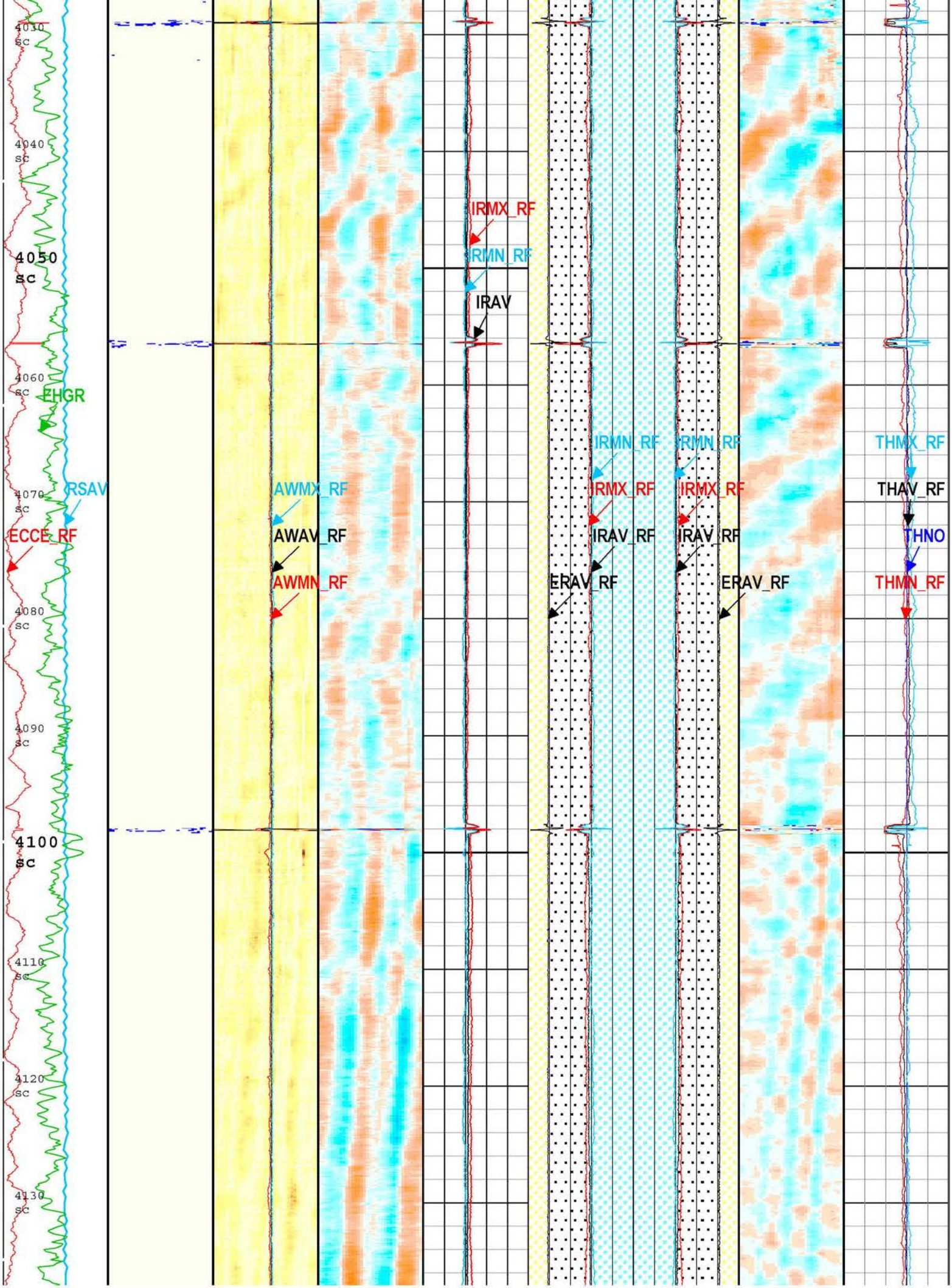
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4120 sc
4130 sc
EHGR
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ECCE_RF
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IRAV_RF
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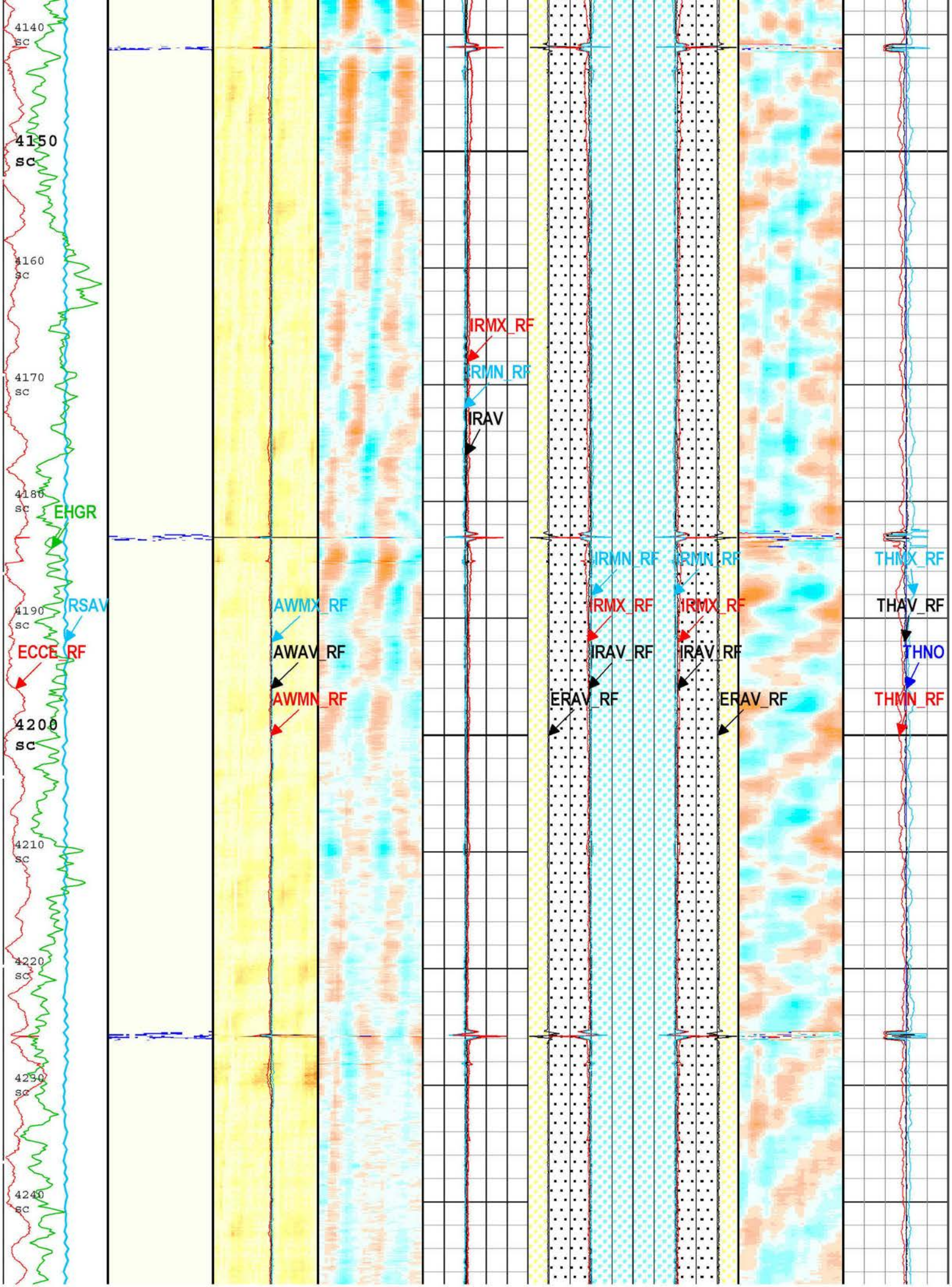
THMX_RF
THAV_RF
THNO
THMN_RF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EHGR
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IRAV
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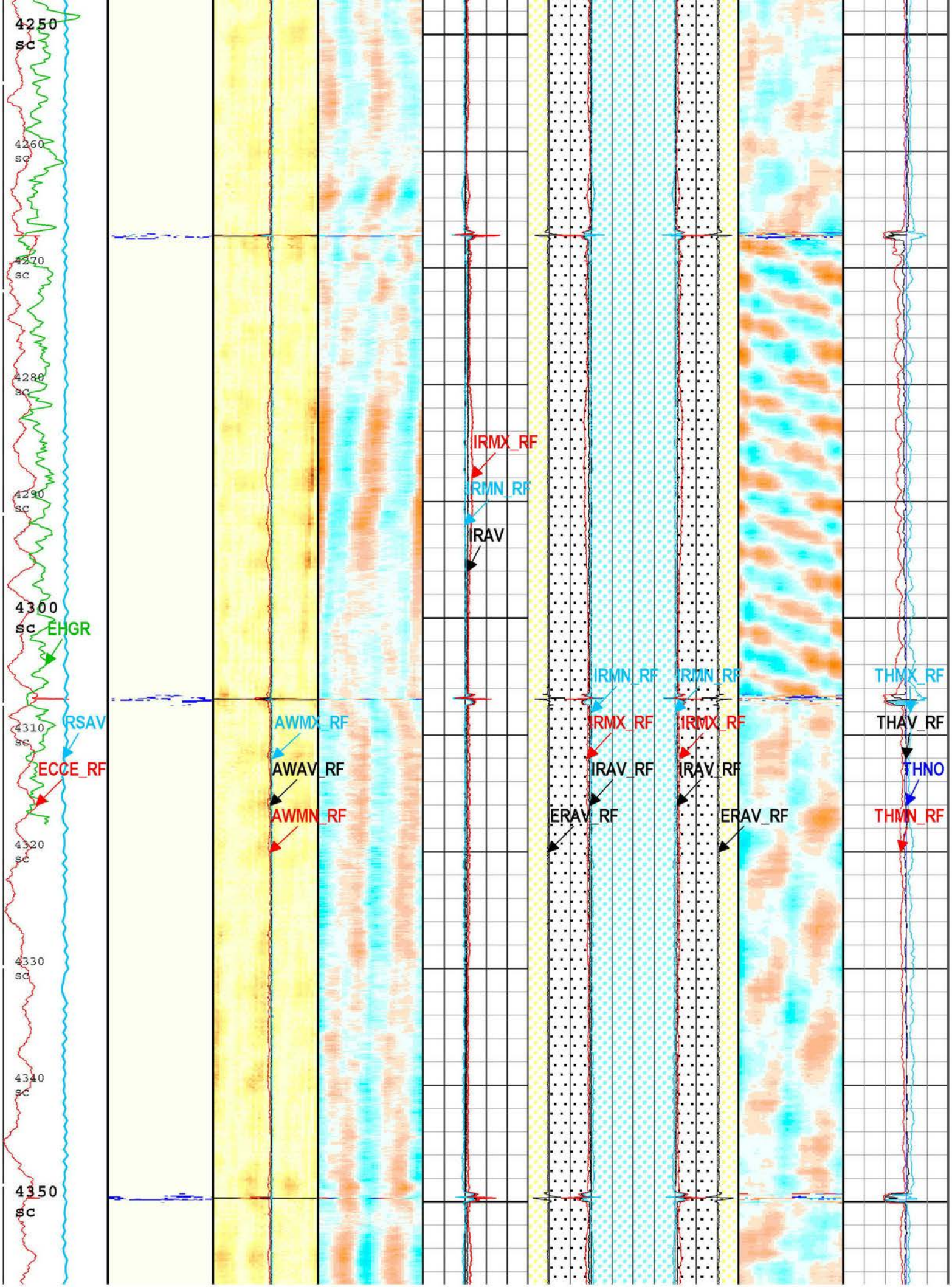
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF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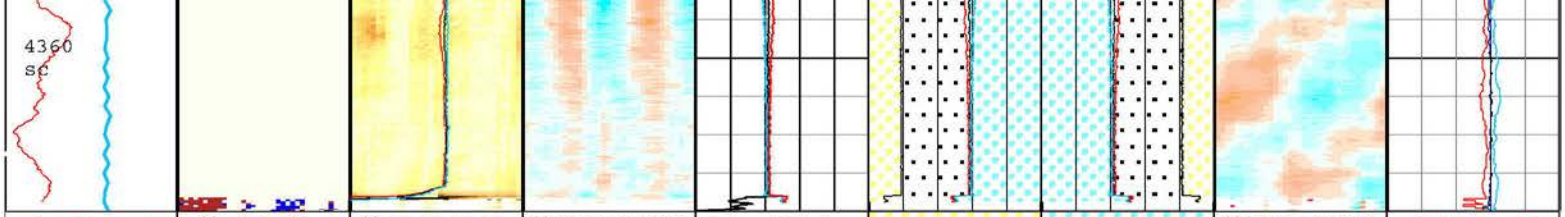
AWAV_RF
AWMN_RF
IRMX_RF
IRMN_RF
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

Gamma Ray (EHGR) HGNS-H
50 gAPI 200

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0]) USIT-E
1 5

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Internal Radius Averaged Value (IRAV) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:11:55

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	11	in

CBLO	Casing Bottom (Logger)	WLSESSION	7331	ft
CDEN	Cement Density	HGNS-H	2.65	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.4	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	55000	psi
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	193	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	24.96	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Centered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.68	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	120	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 0.6 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7030	ft
VRES	Vertical Resolution	USIT-E	0.6 in	
WINB	Window Begin Time	USIT-E	59.63	us
WINE	Window End Time	USIT-E	99.63	us

One

USIT CORROSION 10" = 100'

Software Version

Acquisition System	Version
Maxwell 2017 SP1	7.1.82245.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[7]:Up	Up	4689.11 ft	4946.23 ft	02-Jun-2017 9:02:58 PM	02-Jun-2017 9:18:10 PM	ON	2.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 35B

One: Log[7]:Up:S011

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:12:00

TIME_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

Gamma Ray (EHGR) HGNS-H
50 gAPI 200

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0]) USIT-E
1 5

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Internal Radius Averaged Value (IRAV) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

ERAV | IRAV | ERAV-IRAV | ERAV | IRAV | IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

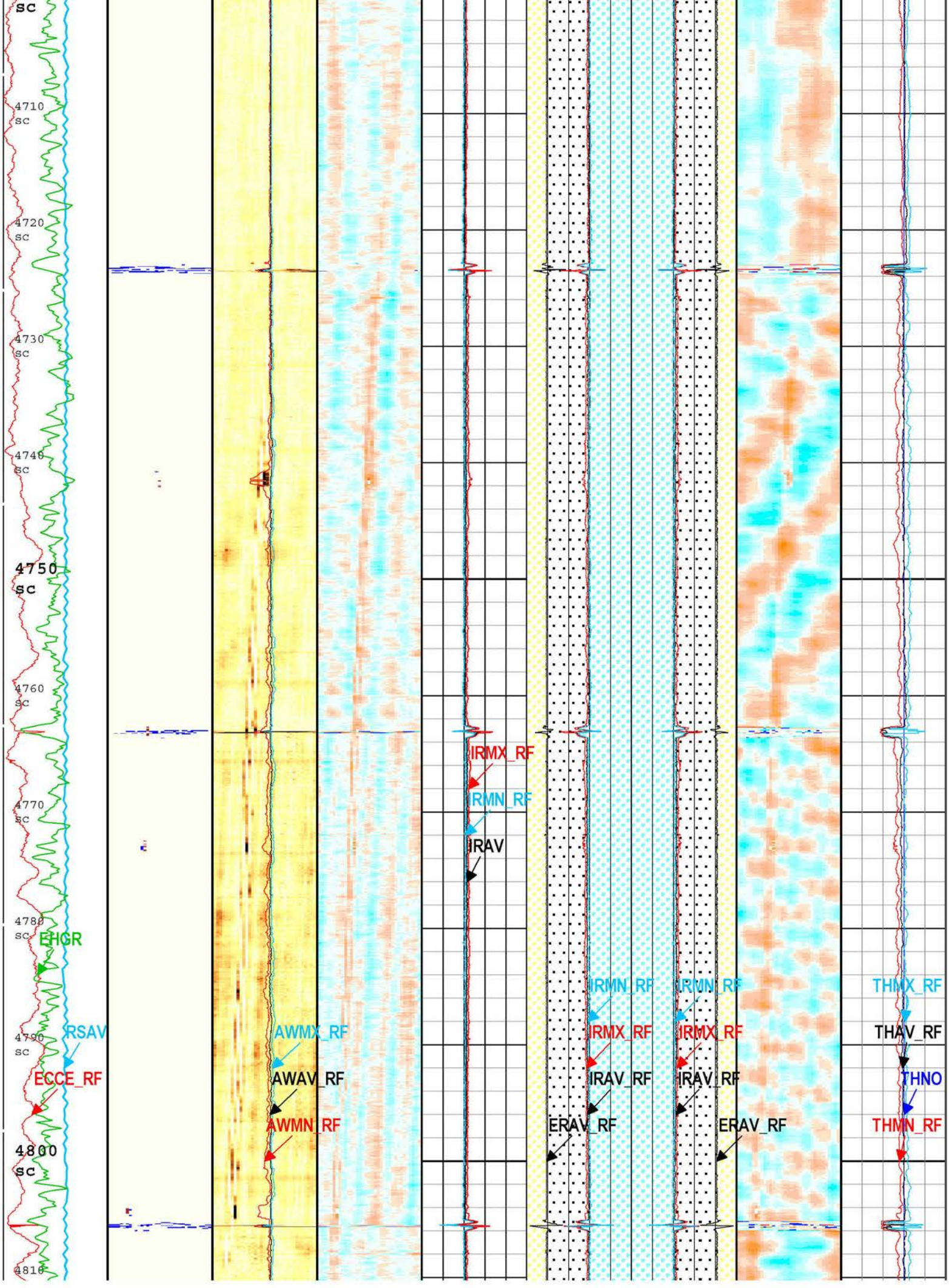
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)

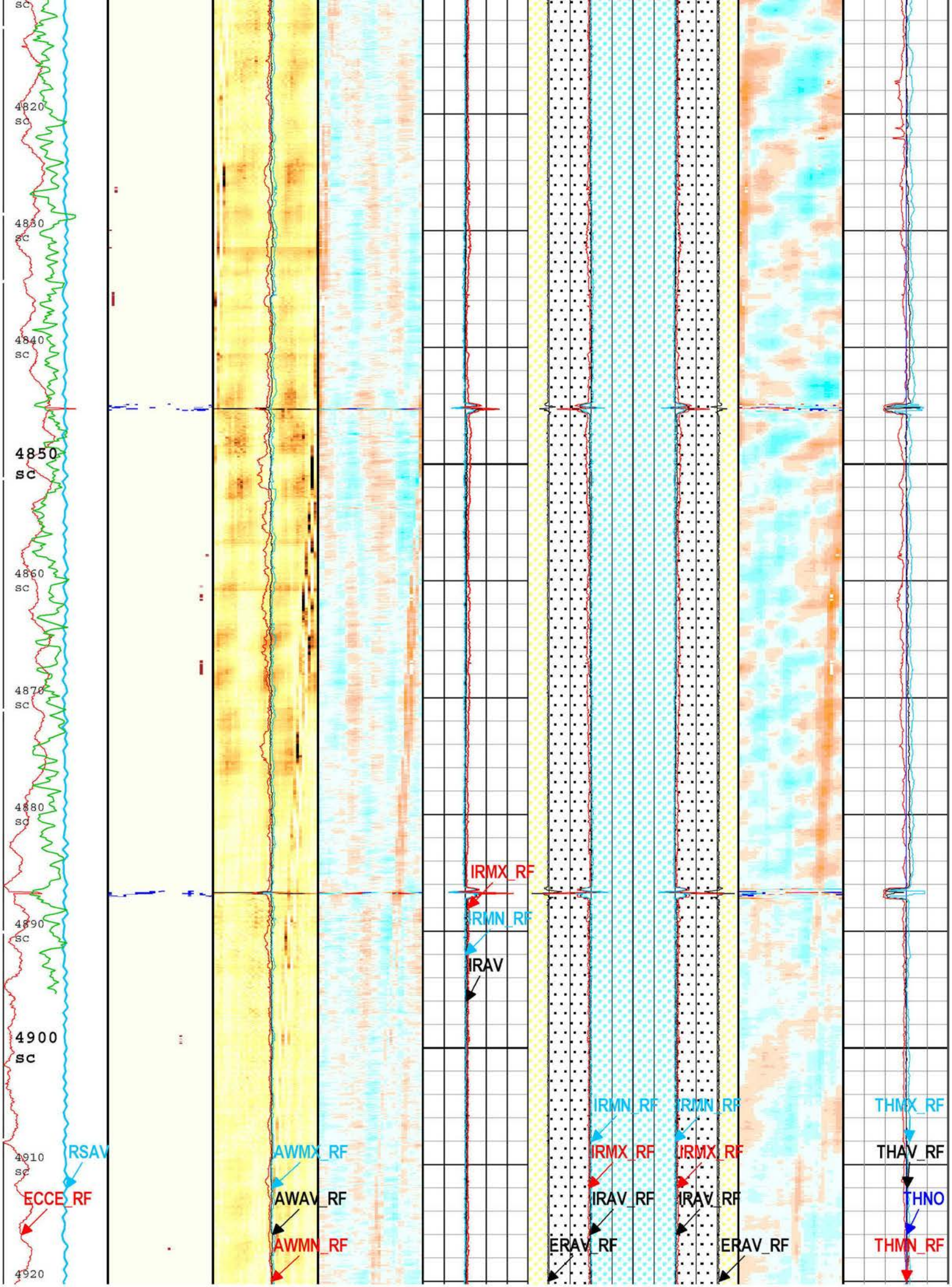
Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6


sc
4710
sc
4720
sc
4730
sc
4740
sc
4750
sc
4760
sc
4770
sc
4780
sc
4790
sc
4800
sc
4810
EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMX_RF
IRMN_RF
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


4820 sc
4830 sc
4840 sc
4850 sc
4860 sc
4870 sc
4880 sc
4890 sc
4900 sc
4910 sc
4920
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMX_RF
IRMN_RF
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
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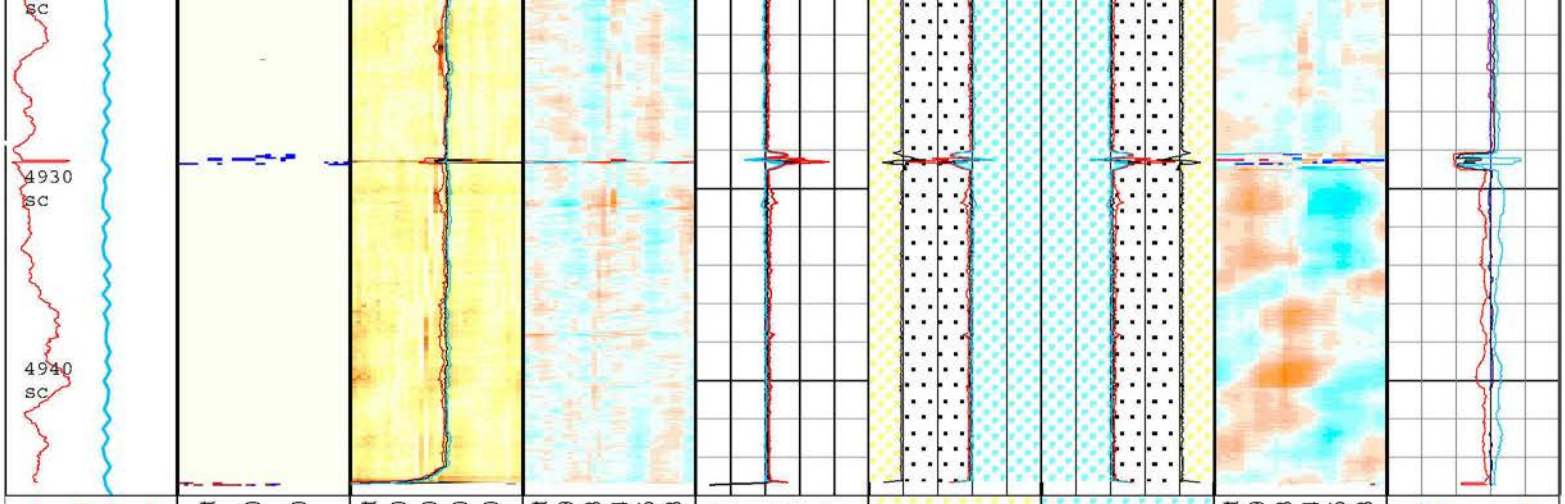
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

Gamma Ray (EHGR) HGNS-H
50 gAPI 200

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0]) USIT-E
1 5

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Internal Radius Averaged Value (IRAV) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

UTIM Error
Pulse Origin Not Detected
WINLEN Error
Casing Thickness Error
Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:12:00

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	11	in
CBLO	Casing Bottom (Logger)	WLSESSION	7331	ft
CDEN	Cement Density	HGNS-H	2.65	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.4	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	55000	psi
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	193	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	24.96	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Centered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.68	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	120	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 0.6	

			in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7030	ft
VRES	Vertical Resolution	USIT-E	0.6 in	
WINB	Window Begin Time	USIT-E	59.63	us
WINE	Window End Time	USIT-E	99.63	us

One

USIT CORROSION 10" = 100'

Software Version

Acquisition System	Version
Maxwell 2017 SP1	7.1.82245.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	5305.38 ft	5812.78 ft	02-Jun-2017 8:32:42 PM	02-Jun-2017 9:01:04 PM	ON	2.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 35B

One: Log[6]:Up:S011

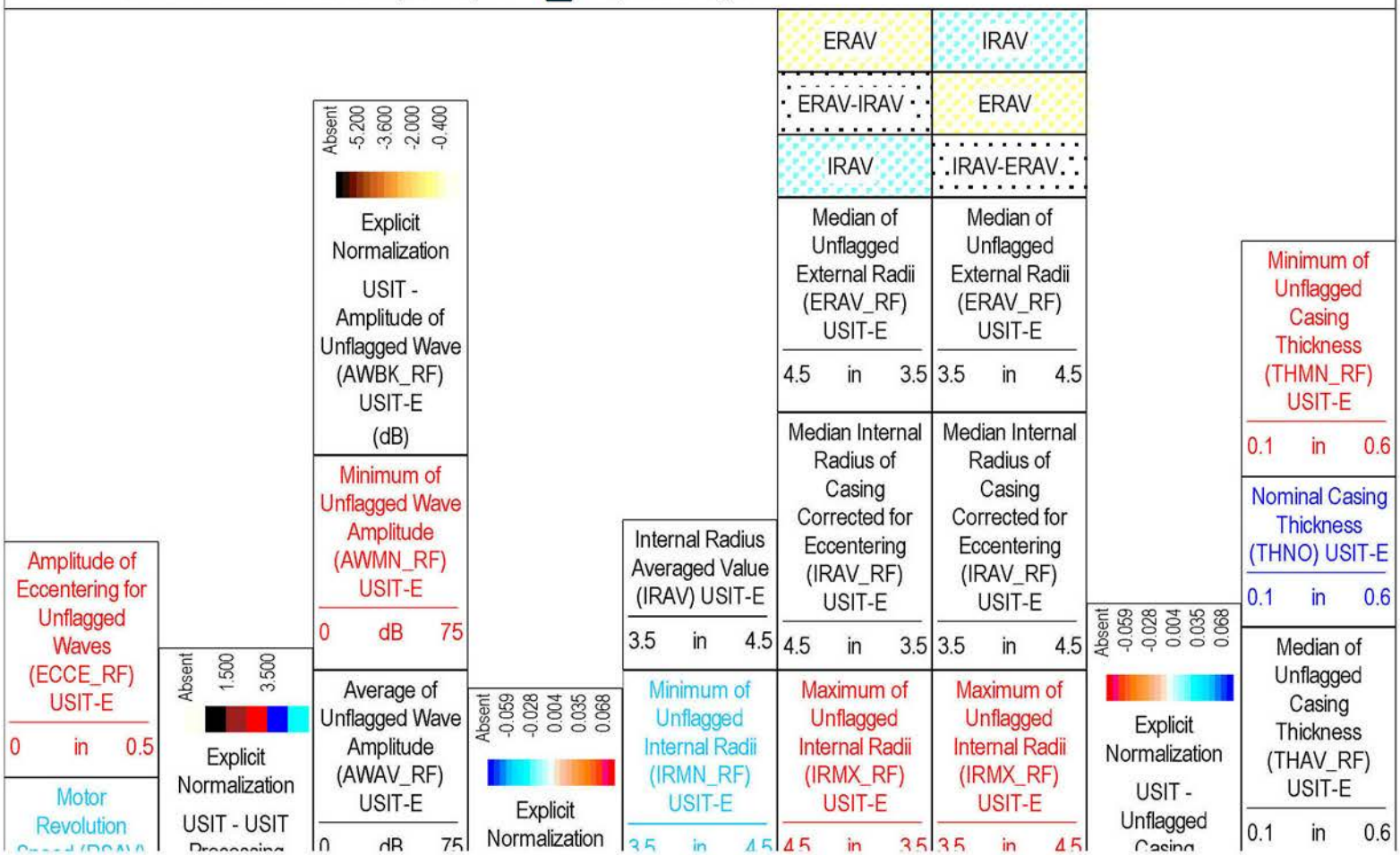
Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:12:04

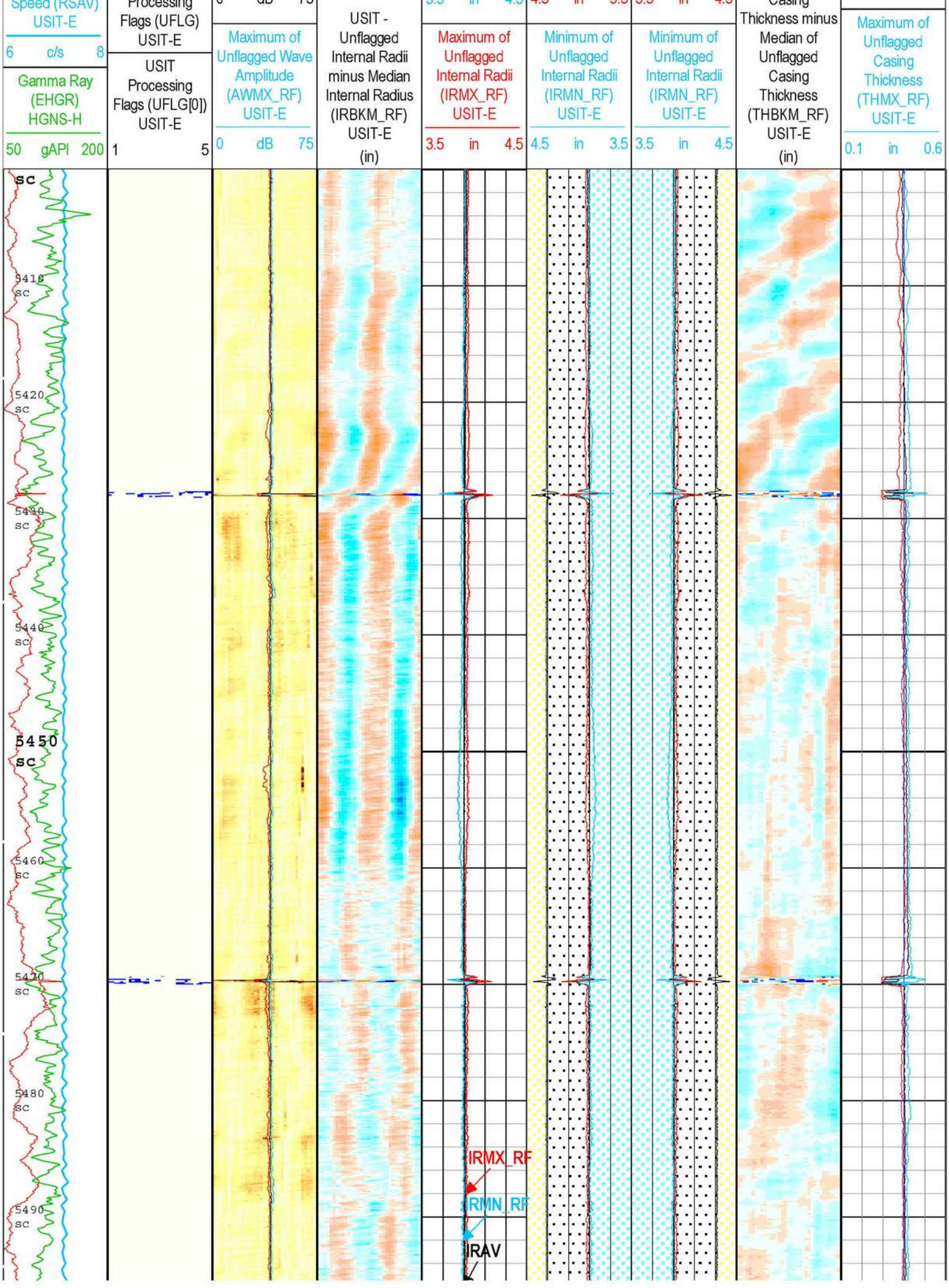
TIME_1900 - Time Marked every 60.00 (s)

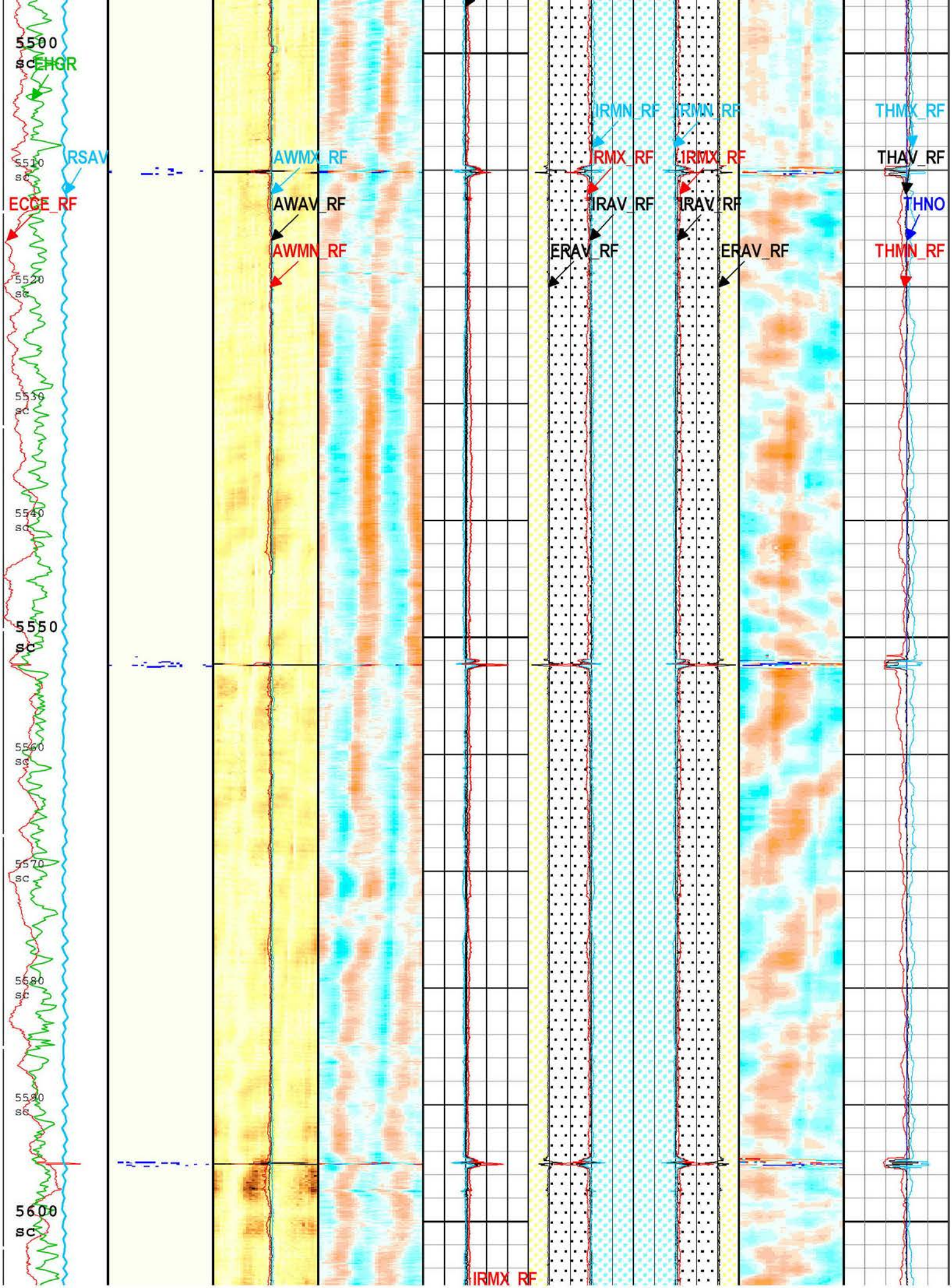
USIT Processing Flags (UFLG[0]) USIT-E

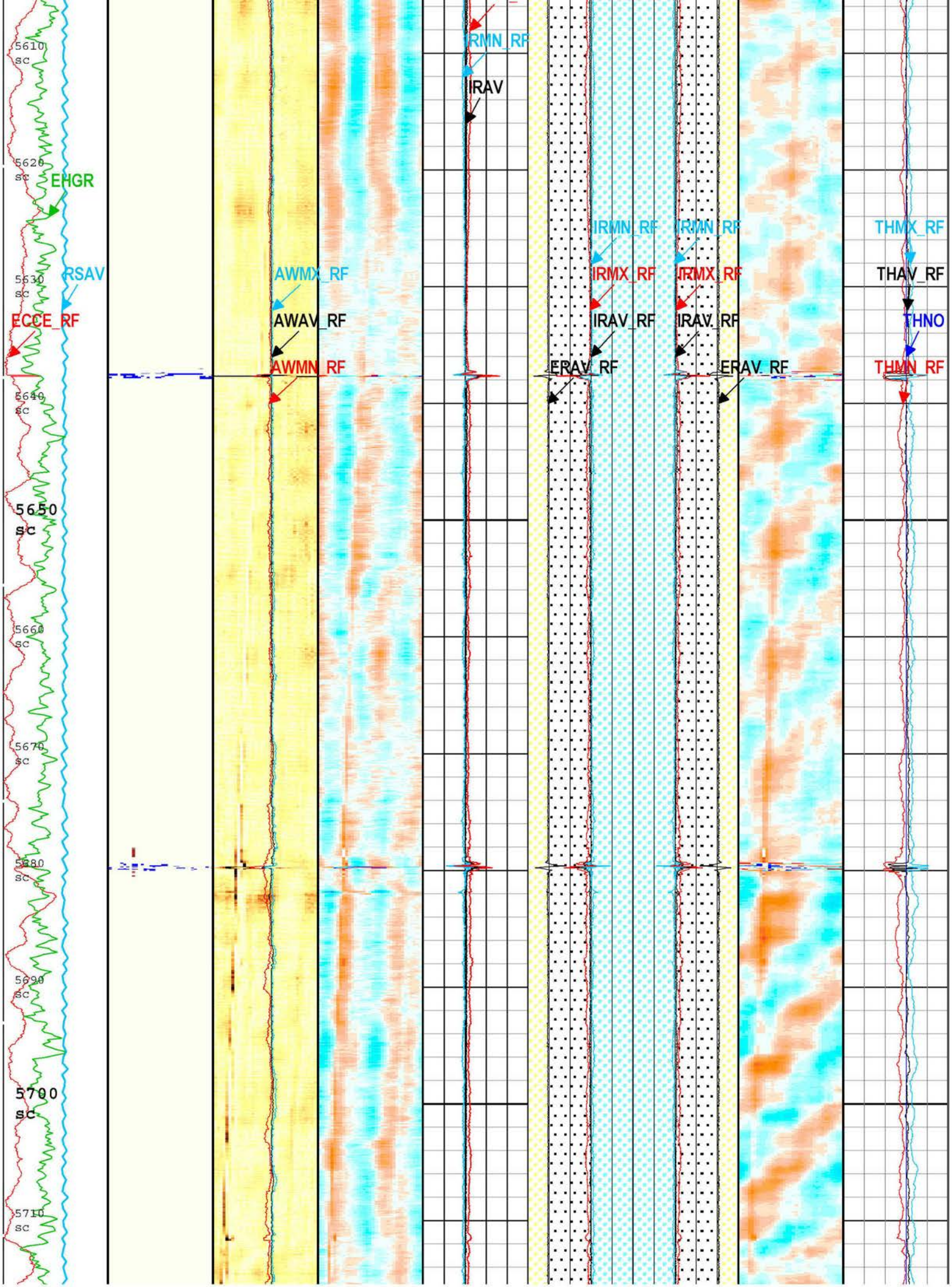
1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

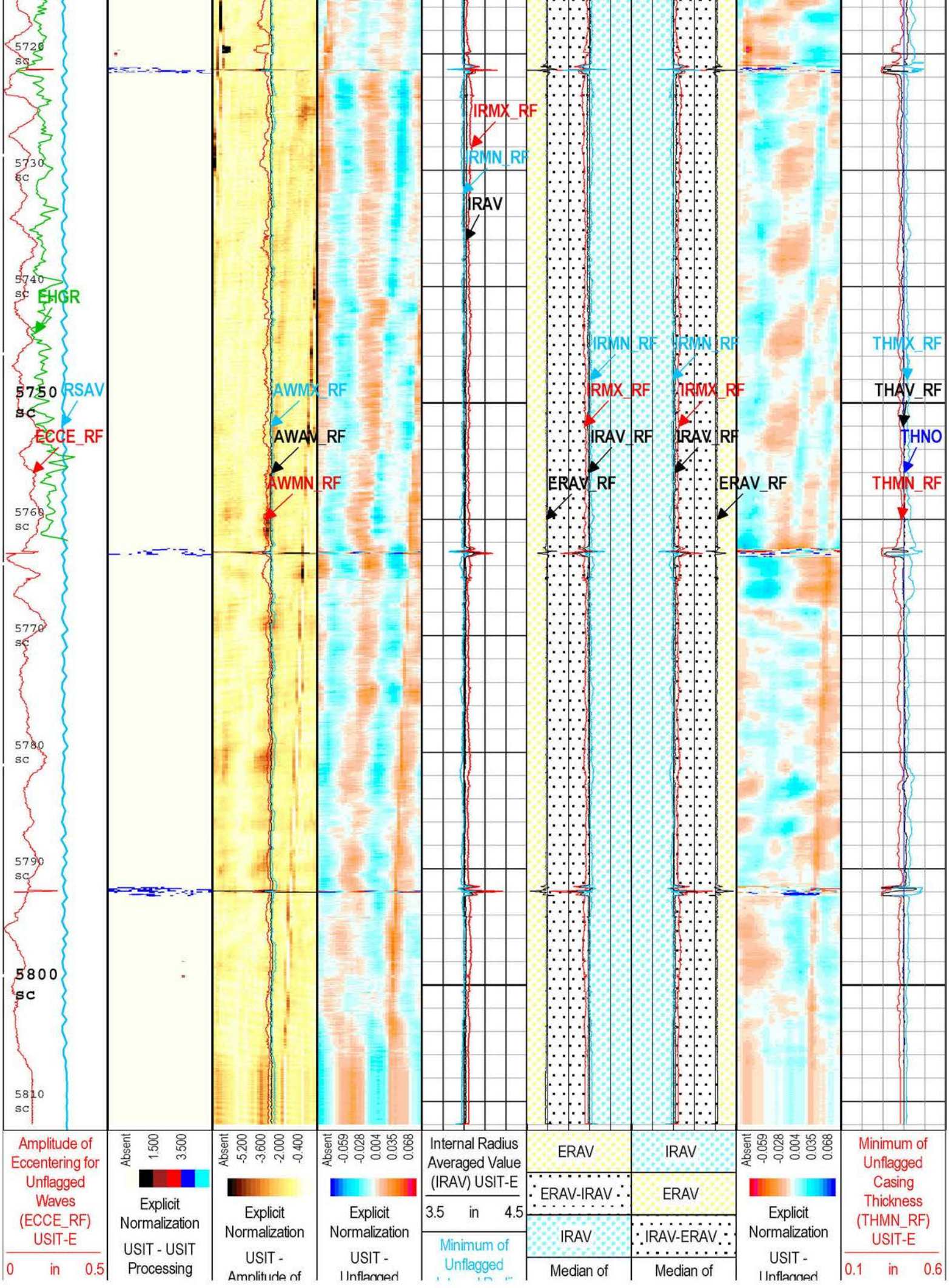
- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error




Speed (RSAV) USIT-E
6 c/s 8
Gamma Ray (EHGR) HGNS-H
50 gAPI 200
Processing Flags (UFLG) USIT-E
USIT Processing Flags (UFLG[0]) USIT-E
1 5
Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E
(in)
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5
Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E
(in)
Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6
5410 sc
5420 sc
5430 sc
5440 sc
5450 sc
5460 sc
5470 sc
5480 sc
5490 sc
IRMX_RF
IRMN_RF
IRAV


5500
sc
EHGR
RSAV
ECGE_RF
5510
sc
AWMX_RF
AWAV_RF
AWMN_RF
5520
sc
5530
sc
5540
sc
5550
sc
5560
sc
5570
sc
5580
sc
5590
sc
5600
sc
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
IRMX_RF


5610 sc
5620 sc
EHGR
RSAV
5630 sc
ECCE_RF
5640 sc
5650 sc
5660 sc
5670 sc
5680 sc
5690 sc
5700 sc
5710 sc
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


5720 sc
5730 sc
5740 sc
5750 sc
5760 sc
5770 sc
5780 sc
5790 sc
5800 sc
5810 sc
EHGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMX_RF
IRMN_RF
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5
Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing
Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged
Internal Radius Averaged Value (IRAV) USIT-E
3.5 in 4.5
Minimum of Unflagged
ERAV
ERAV-IRAV
IRAV
Median of
IRAV
ERAV
IRAV-ERAV
Median of
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged
Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

Gamma Ray (EHGR) HGNS-H
50 gAPI 200

Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0]) USIT-E
1 5

Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Unflagged External Radii (ERAV_RF) USIT-E
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4.5 in 3.5

Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 4.5

Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 17-Jul-2017 14:12:04

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	11	in
CBLO	Casing Bottom (Logger)	WLSESSION	7331	ft
CDEN	Cement Density	HGNS-H	2.65	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.4	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	55000	psi
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	193	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	

HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	24.96	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Centered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.68	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	120	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 0.6 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7030	ft
VRES	Vertical Resolution	USIT-E	0.6 in	
WINB	Window Begin Time	USIT-E	59.63	us
WINE	Window End Time	USIT-E	99.63	us

Company:	Southern California Gas Company
Well:	Fernando Fee 35B
Field:	Aliso Canyon
County:	Los Angeles
State:	California

Schlumberger

Ultrasonic Imager

Gamma Ray - CCL

8 5/8" 36# casing

Company Southern California Gas Company
Well Name Fernando Fee 35B
Log Date 01-Jun-2017

Joint No	Joint_Top	Joint_Len	CWEI_Joi	YIELD_Joint	IRAV_Join	IRMN_Joi	IRMN_Joi	IRMX_Joi	IRMX_Joi
	ft	ft	lbf/ft	psi	in	in	ft	in	ft
1	14.621	8.978	36.000	55000.000	3.904	3.846	18.371	3.952	17.121
2	23.599	42.511	36.000	55000.000	3.932	3.899	60.724	4.006	26.099
3	66.109	42.516	36.000	55000.000	3.924	3.895	104.984	3.967	69.109
4	108.625	42.625	36.000	55000.000	3.916	3.875	110.875	3.975	146.000
5	151.250	41.625	36.000	55000.000	3.907	3.872	153.625	3.962	154.250
6	192.875	41.125	36.000	55000.000	3.908	3.883	229.250	3.952	195.625
7	234.000	42.250	36.000	55000.000	3.910	3.869	236.375	3.970	236.250
8	276.250	38.375	36.000	55000.000	3.915	3.879	282.250	3.961	278.500
9	314.625	40.500	36.000	55000.000	3.903	3.871	350.625	3.941	336.125
10	355.125	39.625	36.000	55000.000	3.924	3.889	357.250	3.976	358.000
11	394.750	43.375	36.000	55000.000	3.917	3.869	397.000	3.987	397.375
12	438.125	40.875	36.000	55000.000	3.913	3.884	473.375	3.970	441.000
13	479.000	42.000	36.000	55000.000	3.915	3.872	512.375	3.972	497.250
14	521.000	39.125	36.000	55000.000	3.910	3.879	556.375	3.970	524.125
15	560.125	41.500	36.000	55000.000	3.916	3.880	568.625	3.958	563.000
16	601.625	42.750	36.000	55000.000	3.922	3.879	610.125	3.995	603.750
17	644.375	42.750	36.000	55000.000	3.918	3.871	646.500	3.978	646.750
18	687.125	40.500	36.000	55000.000	3.918	3.862	723.250	3.964	724.625
19	727.625	43.750	36.000	55000.000	3.915	3.880	731.125	3.989	731.125
20	771.375	43.375	36.000	55000.000	3.927	3.889	786.875	3.977	775.500
21	814.750	41.750	36.000	55000.000	3.922	3.884	855.250	3.976	817.750
22	856.500	42.000	36.000	55000.000	3.919	3.886	858.750	3.971	859.750
23	898.500	41.375	36.000	55000.000	3.917	3.879	900.875	3.962	901.000
24	939.875	41.500	36.000	55000.000	3.922	3.881	942.000	3.966	943.000
25	981.375	41.000	36.000	55000.000	3.907	3.878	1016.000	3.952	986.250
26	1022.375	40.375	36.000	55000.000	3.921	3.873	1053.000	3.965	1031.000
27	1062.750	39.750	36.000	55000.000	3.912	3.878	1066.250	3.980	1066.125
28	1102.500	41.500	36.000	55000.000	3.912	3.872	1104.625	3.964	1104.750
29	1144.000	41.750	36.000	55000.000	3.923	3.891	1181.125	3.967	1145.125
30	1185.750	43.500	36.000	55000.000	3.923	3.892	1220.875	3.985	1189.000
31	1229.250	41.375	36.000	55000.000	3.919	3.880	1268.125	3.968	1232.125
32	1270.625	41.875	36.000	55000.000	3.922	3.885	1303.750	3.972	1273.750
33	1312.500	41.625	36.000	55000.000	3.923	3.887	1351.625	3.966	1332.000
34	1354.125	39.750	36.000	55000.000	3.915	3.865	1386.875	3.966	1362.875
35	1393.875	41.750	36.000	55000.000	3.917	3.865	1402.625	3.966	1397.125
36	1435.625	40.875	36.000	55000.000	3.914	3.886	1471.250	3.961	1447.125
37	1476.500	42.875	36.000	55000.000	3.924	3.896	1512.375	3.969	1479.500
38	1519.375	41.375	36.000	55000.000	3.915	3.885	1544.625	3.953	1522.625
39	1560.750	41.875	36.000	55000.000	3.912	3.875	1594.375	3.949	1563.125
40	1602.625	39.125	36.000	55000.000	3.911	3.873	1604.875	3.989	1604.875
41	1641.750	42.625	36.000	55000.000	3.912	3.857	1644.000	3.958	1650.500
42	1684.375	41.000	36.000	55000.000	3.919	3.865	1686.625	3.974	1686.750
43	1725.375	40.875	36.000	55000.000	3.915	3.870	1727.625	3.957	1734.000
44	1766.250	41.875	36.000	55000.000	3.919	3.884	1806.500	3.979	1769.125
45	1808.125	41.500	36.000	55000.000	3.905	3.873	1816.750	3.957	1810.875
46	1849.625	43.125	36.000	55000.000	3.914	3.887	1890.875	3.969	1851.750
47	1892.750	42.250	36.000	55000.000	3.907	3.865	1926.250	3.956	1896.125
48	1935.000	41.125	36.000	55000.000	3.917	3.877	1943.375	3.972	1937.500
49	1976.125	40.750	36.000	55000.000	3.923	3.896	2012.625	3.990	1978.750
50	2016.875	41.375	36.000	55000.000	3.916	3.886	2053.375	3.957	2020.375
51	2058.250	42.500	36.000	55000.000	3.919	3.884	2060.375	3.968	2061.250
52	2100.750	41.125	36.000	55000.000	3.917	3.879	2117.875	3.972	2103.250
53	2141.875	41.500	36.000	55000.000	3.913	3.880	2174.250	3.954	2144.125
54	2183.375	41.500	36.000	55000.000	3.909	3.877	2185.750	3.964	2186.375
55	2224.875	42.000	36.000	55000.000	3.920	3.890	2255.375	3.962	2227.875
56	2266.875	41.000	36.000	55000.000	3.907	3.877	2295.375	3.940	2270.000
57	2307.875	43.500	36.000	55000.000	3.911	3.872	2343.500	3.967	2310.125

THAV_Joi	THMN_Joi	THMN_Joi	IDMN_Joi	IDMN_Joi	PENMX_R	PENMX_J	BURSTMN	COLLAPS	COLLAPS
in	in	ft	in	ft	%	%	psi	psi	psi
0.418	0.388	22.496	7.726	18.371	9.931	2.910	4953.008	3226.124	2690.559
0.383	0.324	29.849	7.802	60.724	23.425	18.954	4134.536	2134.440	1907.545
0.389	0.353	75.734	7.792	106.734	13.611	11.636	4507.828	2560.462	2409.807
0.396	0.340	146.125	7.755	110.875	15.556	15.052	4333.562	2332.416	2306.859
0.405	0.348	154.125	7.765	153.625	12.449	12.909	4442.897	2463.374	2498.485
0.405	0.348	229.625	7.773	227.625	9.860	13.109	4432.675	2448.089	2695.946
0.402	0.345	235.250	7.768	236.375	14.466	13.738	4400.619	2400.156	2362.156
0.398	0.363	277.250	7.777	292.000	12.079	9.288	4627.625	2739.592	2526.661
0.409	0.369	327.125	7.751	350.625	7.163	7.799	4703.574	2853.154	2901.682
0.388	0.348	364.500	7.782	357.250	15.776	13.101	4433.133	2448.774	2295.710
0.395	0.366	402.375	7.755	397.000	18.660	8.610	4662.195	2791.282	2149.344
0.400	0.342	467.000	7.777	473.125	14.271	14.387	4367.516	2366.189	2372.055
0.398	0.355	487.625	7.754	512.375	14.760	11.182	4530.998	2595.108	2347.229
0.403	0.354	525.500	7.772	556.375	14.298	11.553	4512.076	2566.814	2370.694
0.397	0.363	563.500	7.787	568.625	11.253	9.273	4628.379	2740.719	2589.687
0.391	0.339	631.875	7.773	603.625	20.527	15.227	4324.629	2323.530	2054.618
0.394	0.363	646.500	7.743	646.500	16.287	9.282	4627.923	2740.036	2269.786
0.395	0.359	688.875	7.747	723.250	12.829	10.347	4573.579	2658.777	2469.487
0.397	0.353	731.500	7.768	768.500	19.102	11.772	4500.898	2550.101	2126.896
0.386	0.354	776.375	7.790	786.875	16.125	11.623	4508.491	2561.455	2278.004
0.391	0.352	818.750	7.780	855.250	15.936	12.041	4487.164	2529.564	2287.565
0.394	0.358	863.125	7.780	858.750	14.728	10.461	4567.776	2650.101	2348.877
0.396	0.354	901.375	7.776	900.875	12.266	11.598	4509.803	2563.416	2512.412
0.391	0.356	962.375	7.774	942.000	13.397	10.990	4540.788	2609.746	2426.184
0.405	0.362	985.000	7.764	999.500	9.778	9.391	4622.366	2731.727	2702.212
0.391	0.345	1056.500	7.761	1053.000	13.226	13.781	4398.416	2396.927	2439.210
0.400	0.366	1064.000	7.776	1097.750	16.914	8.437	4671.048	2804.519	2237.939
0.401	0.365	1106.375	7.771	1104.625	12.865	8.772	4653.932	2778.927	2466.772
0.389	0.349	1148.750	7.787	1157.625	13.560	12.716	4452.750	2478.107	2413.731
0.389	0.345	1193.750	7.798	1214.625	18.013	13.712	4401.924	2402.107	2182.189
0.394	0.345	1236.000	7.767	1268.625	13.965	13.647	4405.239	2407.066	2387.617
0.391	0.354	1274.750	7.775	1303.750	14.884	11.484	4515.602	2572.087	2340.956
0.389	0.343	1315.875	7.782	1351.625	13.463	14.252	4374.389	2373.026	2421.156
0.398	0.354	1358.875	7.751	1386.875	13.342	11.395	4520.149	2578.886	2430.340
0.395	0.370	1395.250	7.752	1402.625	13.433	7.558	4715.861	2871.527	2423.411
0.398	0.353	1440.500	7.776	1471.750	12.124	11.786	4500.167	2549.008	2523.296
0.389	0.337	1480.250	7.795	1512.375	14.060	15.743	4298.312	2297.351	2382.750
0.398	0.363	1524.625	7.781	1544.625	10.105	9.240	4630.097	2743.287	2677.310
0.401	0.369	1561.750	7.767	1595.125	9.074	7.715	4707.888	2859.605	2755.880
0.402	0.362	1640.250	7.757	1604.750	19.066	9.464	4618.643	2726.161	2128.765
0.400	0.360	1646.250	7.719	1644.000	11.262	10.007	4590.934	2684.728	2588.991
0.393	0.349	1691.875	7.758	1686.625	15.315	12.812	4447.872	2470.813	2319.094
0.397	0.349	1727.250	7.767	1727.625	11.038	12.837	4446.568	2468.863	2606.100
0.393	0.353	1780.125	7.777	1803.750	16.554	11.652	4507.018	2559.252	2256.232
0.407	0.374	1841.000	7.755	1816.750	11.103	6.425	4773.691	2957.999	2601.162
0.399	0.355	1856.125	7.780	1851.875	14.003	11.198	4530.177	2593.880	2385.648
0.405	0.366	1912.500	7.744	1899.000	10.806	8.471	4669.296	2801.900	2623.786
0.396	0.356	1939.750	7.760	1943.375	14.990	10.893	4545.772	2617.199	2335.572
0.390	0.346	1981.250	7.801	2009.625	19.487	13.605	4407.415	2410.318	2107.389
0.396	0.360	2038.625	7.775	2053.375	11.139	9.958	4593.466	2688.514	2598.375
0.393	0.357	2061.000	7.779	2060.375	13.898	10.687	4556.272	2632.899	2390.975
0.395	0.351	2110.000	7.768	2128.375	14.803	12.173	4480.458	2519.536	2345.060
0.399	0.329	2151.875	7.766	2174.250	10.356	17.692	4198.900	2198.464	2658.132
0.403	0.343	2195.250	7.769	2200.000	12.952	14.251	4374.461	2373.098	2460.111
0.393	0.346	2231.750	7.780	2255.375	12.355	13.452	4415.219	2421.988	2505.628
0.405	0.370	2272.000	7.759	2295.375	6.803	7.573	4715.137	2870.445	2929.117
0.402	0.363	2310.500	7.750	2343.500	13.667	9.218	4631.216	2744.961	2405.552

IDMN_Col	IRMX_Col	MAOP	Delta_MAOP_Barlow
in	in	psi	psi
7.731	4.013	3625.000	1328.008
7.460	4.215	3625.000	509.536
7.787	4.184	3625.000	882.828
7.675	4.339	3625.000	708.562
7.457	4.356	3625.000	817.897
7.629	4.326	3625.000	807.675
7.698	4.304	3625.000	775.619
7.685	4.205	3625.000	1002.625
7.669	4.189	3625.000	1078.574
7.572	4.346	3625.000	808.133
7.721	4.212	3625.000	1037.195
7.802	4.170	3625.000	742.516
7.685	4.147	3625.000	905.998
7.746	4.215	3625.000	887.076
7.781	4.194	3625.000	1003.379
7.511	4.344	3625.000	699.629
7.799	4.214	3625.000	1002.923
7.774	4.050	3625.000	948.579
7.578	4.309	3625.000	875.898
7.762	4.172	3625.000	883.491
7.671	4.319	3625.000	862.164
7.699	4.273	3625.000	942.776
7.783	4.227	3625.000	884.803
7.794	4.232	3625.000	915.788
7.592	4.237	3625.000	997.366
7.664	4.285	3625.000	773.416
7.722	4.307	3625.000	1046.048
7.776	4.166	3625.000	1028.932
7.667	4.295	3625.000	827.750
7.663	4.265	3625.000	776.924
7.819	4.214	3625.000	780.239
7.591	4.204	3625.000	890.602
7.722	4.181	3625.000	749.389
7.797	4.230	3625.000	895.149
7.660	4.283	3625.000	1090.861
7.801	4.207	3625.000	875.167
7.719	4.214	3625.000	673.312
7.680	4.179	3625.000	1005.097
7.786	4.192	3625.000	1082.888
7.751	4.207	3625.000	993.643
7.735	4.266	3625.000	965.934
7.668	4.260	3625.000	822.872
7.785	4.206	3625.000	821.568
7.786	4.259	3625.000	882.018
7.777	4.208	3625.000	1148.691
7.779	4.203	3625.000	905.177
7.738	4.242	3625.000	1044.296
7.652	4.189	3625.000	920.772
7.628	4.294	3625.000	782.415
7.766	4.194	3625.000	968.466
7.777	4.213	3625.000	931.272
7.702	4.218	3625.000	855.458
7.787	4.212	3625.000	573.900
7.429	4.342	3625.000	749.461
7.721	4.229	3625.000	790.219
7.772	4.215	3625.000	1090.137
7.518	4.330	3625.000	1006.216

58	2351.375	41.000	36.000	55000.000	3.910	3.862	2353.500	3.976	2353.375
59	2392.375	41.125	36.000	55000.000	3.913	3.879	2427.500	3.952	2412.625
60	2433.500	41.000	36.000	55000.000	3.906	3.865	2464.250	3.943	2435.625
61	2474.500	41.750	36.000	55000.000	3.911	3.874	2487.125	3.952	2487.375
62	2516.250	42.750	36.000	55000.000	3.912	3.867	2545.125	3.965	2536.250
63	2559.000	42.375	36.000	55000.000	3.910	3.869	2584.625	3.963	2584.500
64	2601.375	42.375	36.000	55000.000	3.915	3.874	2636.625	3.953	2617.625
65	2643.750	41.250	36.000	55000.000	3.916	3.883	2659.750	3.964	2646.250
66	2685.000	42.250	36.000	55000.000	3.908	3.868	2716.125	3.951	2709.625
67	2727.250	43.250	36.000	55000.000	3.918	3.869	2766.250	3.963	2740.625
68	2770.500	42.375	36.000	55000.000	3.910	3.861	2779.375	3.960	2794.500
69	2812.875	41.500	36.000	55000.000	3.912	3.867	2815.125	3.952	2821.625
70	2854.375	41.875	36.000	55000.000	3.914	3.874	2892.125	3.956	2856.375
71	2896.250	41.750	36.000	55000.000	3.913	3.870	2926.250	3.969	2898.250
72	2938.000	42.500	36.000	55000.000	3.911	3.873	2969.875	3.945	2946.625
73	2980.500	42.500	36.000	55000.000	3.903	3.869	3004.875	3.943	2989.250
74	3023.000	41.750	36.000	55000.000	3.910	3.873	3034.125	3.956	3031.750
75	3064.750	41.875	36.000	55000.000	3.914	3.887	3094.875	3.947	3067.125
76	3106.625	38.875	36.000	55000.000	3.902	3.875	3109.000	3.929	3143.000
77	3145.500	42.375	36.000	55000.000	3.910	3.875	3154.250	3.946	3154.125
78	3187.875	42.500	36.000	55000.000	3.913	3.877	3190.375	3.950	3190.250
79	3230.375	41.875	36.000	55000.000	3.919	3.877	3254.000	3.970	3232.500
80	3272.250	40.875	36.000	55000.000	3.910	3.873	3280.875	3.946	3274.375
81	3313.125	42.250	36.000	55000.000	3.905	3.862	3321.875	3.941	3351.875
82	3355.375	43.000	36.000	55000.000	3.917	3.880	3364.125	3.954	3357.750
83	3398.375	41.375	36.000	55000.000	3.903	3.872	3434.625	3.946	3400.625
84	3439.750	42.000	36.000	55000.000	3.915	3.888	3467.625	3.944	3450.875
85	3481.750	41.125	36.000	55000.000	3.903	3.874	3518.500	3.951	3490.625
86	3522.875	42.250	36.000	55000.000	3.908	3.871	3531.625	3.938	3531.500
87	3565.125	40.750	36.000	55000.000	3.914	3.863	3604.625	4.007	3604.000
88	3605.875	42.750	36.000	55000.000	3.907	3.864	3608.125	3.980	3608.125
89	3648.625	37.500	36.000	55000.000	3.915	3.877	3650.875	3.981	3651.000
90	3686.125	42.750	36.000	55000.000	3.917	3.879	3727.125	3.952	3725.750
91	3728.875	42.250	36.000	55000.000	3.922	3.880	3762.250	3.966	3748.750
92	3771.125	42.125	36.000	55000.000	3.912	3.876	3807.625	3.946	3785.250
93	3813.250	43.500	36.000	55000.000	3.922	3.880	3844.000	3.969	3825.125
94	3856.750	42.625	36.000	55000.000	3.912	3.888	3884.250	3.945	3859.125
95	3899.375	42.375	36.000	55000.000	3.916	3.888	3935.250	3.950	3916.625
96	3941.750	43.715	36.000	55000.000	3.916	3.860	3954.625	3.995	3956.625
97	3985.466	42.785	36.000	55000.000	3.910	3.843	4007.341	3.968	4007.466
98	4028.250	27.702	36.000	55000.000	3.914	3.877	4036.750	3.957	4036.500
99	4055.952	41.173	36.000	55000.000	3.904	3.874	4080.702	3.933	4068.827
100	4097.125	43.375	36.000	55000.000	3.923	3.870	4136.000	3.967	4105.000
101	4140.500	41.875	36.000	55000.000	3.917	3.876	4174.500	3.971	4142.250
102	4182.375	42.750	36.000	55000.000	3.915	3.868	4184.250	3.980	4184.125
103	4225.125	41.500	36.000	55000.000	3.910	3.869	4262.625	3.949	4227.125
104	4266.625	39.750	36.000	55000.000	3.923	3.888	4291.125	3.973	4282.250
105	4306.375	42.375	36.000	55000.000	3.913	3.868	4345.250	3.944	4317.000
106	4348.750	42.375	36.000	55000.000	3.912	3.875	4353.625	3.958	4353.250
107	4391.125	41.875	36.000	55000.000	3.913	3.869	4406.500	3.959	4406.500
108	4433.000	42.375	36.000	55000.000	3.915	3.886	4467.750	3.952	4437.125
109	4475.375	42.250	36.000	55000.000	3.910	3.866	4477.625	3.951	4477.375
110	4517.625	38.250	36.000	55000.000	3.911	3.880	4548.250	3.951	4520.000
111	4555.875	42.000	36.000	55000.000	3.913	3.877	4564.750	3.951	4565.000
112	4597.875	41.000	36.000	55000.000	3.916	3.876	4625.750	3.962	4599.875
113	4638.875	40.375	36.000	55000.000	3.910	3.870	4640.875	3.959	4640.750
114	4679.250	43.250	36.000	55000.000	3.911	3.875	4681.500	3.970	4681.375
115	4722.500	39.875	36.000	55000.000	3.915	3.876	4724.750	3.969	4740.750
116	4762.375	42.500	36.000	55000.000	3.922	3.885	4802.750	3.973	4764.625
117	4804.875	39.500	36.000	55000.000	3.906	3.854	4813.375	3.957	4813.500
118	4844.375	41.375	36.000	55000.000	3.907	3.876	4879.000	3.958	4852.500
119	4885.750	42.125	36.000	55000.000	3.911	3.884	4922.125	3.959	4887.875

0.403	0.345	2362.125	7.733	2353.500	15.836	13.738	4400.613	2400.147	2292.643
0.399	0.361	2397.250	7.763	2427.500	9.980	9.668	4608.235	2710.598	2686.844
0.407	0.363	2436.875	7.731	2435.750	7.690	9.219	4631.142	2744.850	2861.513
0.401	0.354	2478.125	7.764	2514.125	9.970	11.454	4517.111	2574.344	2687.549
0.400	0.364	2534.375	7.755	2557.125	13.039	8.908	4647.031	2768.609	2453.464
0.403	0.362	2565.375	7.763	2577.875	12.606	9.414	4621.187	2729.964	2486.528
0.397	0.355	2603.125	7.751	2636.625	10.136	11.244	4527.854	2590.408	2674.886
0.397	0.339	2658.500	7.774	2678.625	12.755	15.209	4325.586	2324.482	2475.120
0.405	0.346	2688.875	7.745	2717.000	9.746	13.510	4412.256	2417.557	2704.676
0.395	0.363	2734.875	7.744	2766.250	12.714	9.352	4624.357	2734.705	2478.257
0.403	0.361	2778.250	7.736	2779.375	11.785	9.805	4601.234	2700.130	2549.158
0.400	0.357	2814.500	7.742	2815.125	9.819	10.711	4555.029	2631.041	2699.125
0.399	0.355	2859.375	7.751	2892.125	10.869	11.282	4525.926	2587.525	2618.981
0.400	0.351	2899.250	7.743	2926.750	14.078	12.353	4471.275	2505.807	2381.855
0.401	0.352	2947.500	7.764	2969.875	8.206	11.917	4493.502	2539.041	2822.111
0.409	0.379	3021.750	7.743	3004.875	7.566	5.249	4833.695	3047.721	2870.947
0.403	0.361	3024.000	7.753	3034.125	10.960	9.633	4610.026	2713.277	2612.061
0.398	0.357	3075.250	7.776	3094.875	8.580	10.855	4547.677	2620.048	2793.595
0.410	0.384	3130.000	7.758	3108.875	4.090	4.087	4892.969	3136.351	3136.076
0.403	0.366	3148.375	7.753	3154.250	8.449	8.544	4665.587	2796.355	2803.566
0.400	0.345	3194.375	7.775	3190.375	9.471	13.771	4398.948	2397.658	2725.609
0.393	0.354	3243.375	7.778	3239.000	14.356	11.499	4514.859	2570.975	2367.776
0.402	0.372	3276.125	7.772	3280.875	8.299	7.106	4738.916	2906.001	2815.005
0.408	0.376	3320.500	7.738	3321.875	7.129	6.025	4794.105	2988.523	2904.279
0.395	0.349	3362.875	7.776	3389.125	10.454	12.655	4455.850	2482.741	2650.680
0.409	0.375	3401.125	7.750	3414.625	8.369	6.356	4777.198	2963.242	2809.713
0.397	0.360	3448.375	7.782	3474.500	7.920	9.910	4595.904	2692.159	2843.935
0.409	0.372	3484.375	7.757	3518.750	9.633	7.079	4740.334	2908.122	2713.301
0.405	0.365	3528.375	7.763	3549.250	6.332	8.730	4656.090	2782.154	2965.040
0.398	0.358	3569.500	7.742	3604.500	23.566	10.553	4563.076	2643.073	1900.413
0.406	0.375	3616.375	7.759	3608.125	16.920	6.250	4782.628	2971.362	2237.616
0.397	0.363	3649.625	7.763	3650.875	17.228	9.271	4628.510	2740.914	2221.990
0.395	0.355	3689.375	7.766	3727.625	9.812	11.175	4531.366	2595.658	2699.606
0.391	0.355	3732.875	7.773	3762.250	13.315	11.291	4525.468	2586.839	2432.377
0.400	0.369	3778.250	7.764	3806.125	8.472	7.794	4703.863	2853.587	2801.865
0.390	0.344	3825.125	7.782	3845.875	14.057	14.067	4383.847	2382.435	2382.926
0.401	0.366	3865.625	7.780	3884.250	8.221	8.597	4662.855	2792.269	2820.975
0.397	0.352	3924.375	7.781	3939.750	9.276	11.950	4491.845	2536.563	2740.494
0.396	0.327	3981.500	7.758	3980.625	20.607	18.140	4176.028	2175.713	2050.520
0.402	0.347	3993.591	7.687	4007.341	13.764	13.293	4423.321	2434.103	2398.159
0.398	0.355	4034.250	7.760	4036.750	11.070	11.203	4529.943	2593.531	2603.631
0.408	0.367	4062.327	7.755	4095.952	5.091	8.291	4678.465	2815.610	3059.729
0.390	0.348	4098.375	7.746	4136.125	13.522	12.950	4440.809	2460.251	2416.604
0.396	0.358	4147.625	7.765	4174.750	14.545	10.538	4563.858	2644.242	2358.157
0.397	0.350	4186.625	7.748	4184.125	16.995	12.601	4458.626	2486.894	2233.844
0.403	0.367	4232.250	7.743	4262.625	9.044	8.135	4686.471	2827.581	2758.213
0.389	0.336	4267.750	7.788	4290.000	15.250	15.945	4287.999	2287.093	2322.388
0.399	0.362	4316.125	7.751	4345.250	7.977	9.446	4619.568	2727.544	2839.607
0.401	0.368	4361.250	7.763	4353.625	11.370	8.085	4688.972	2831.321	2580.812
0.400	0.357	4395.375	7.741	4406.500	11.577	10.627	4559.336	2637.481	2564.975
0.398	0.352	4438.250	7.776	4463.000	9.798	11.959	4491.357	2535.834	2700.679
0.403	0.374	4496.250	7.741	4477.625	9.589	6.496	4770.069	2952.583	2716.661
0.401	0.376	4525.500	7.773	4548.250	9.607	5.975	4796.633	2992.303	2715.297
0.399	0.366	4559.250	7.772	4564.750	9.667	8.503	4667.663	2799.458	2710.709
0.397	0.360	4604.875	7.764	4627.750	12.383	9.954	4593.662	2688.807	2503.518
0.402	0.369	4652.000	7.761	4640.875	11.577	7.676	4709.877	2862.580	2564.994
0.401	0.370	4686.125	7.761	4687.750	14.474	7.504	4718.614	2875.644	2361.784
0.398	0.352	4746.375	7.761	4724.750	14.058	12.091	4484.612	2525.748	2382.863
0.391	0.349	4763.625	7.774	4802.750	15.164	12.692	4453.987	2479.957	2326.740
0.406	0.340	4821.500	7.737	4813.375	11.129	14.933	4339.633	2338.454	2599.171
0.406	0.356	4860.500	7.757	4879.000	11.264	10.909	4544.917	2615.921	2588.868
0.402	0.380	4910.625	7.775	4925.500	11.674	4.997	4846.510	3066.882	2557.564

7.716	4.181	3625.000	775.613
7.674	4.249	3625.000	983.235
7.654	4.305	3625.000	1006.142
7.707	4.337	3625.000	892.111
7.775	4.179	3625.000	1022.031
7.677	4.231	3625.000	996.187
7.742	4.283	3625.000	902.854
7.649	4.371	3625.000	700.586
7.788	4.270	3625.000	787.256
7.769	4.237	3625.000	999.357
7.573	4.245	3625.000	976.234
7.783	4.225	3625.000	930.029
7.535	4.370	3625.000	900.926
7.742	4.184	3625.000	846.275
7.527	4.341	3625.000	868.502
7.528	4.308	3625.000	1208.695
7.690	4.216	3625.000	985.026
7.594	4.348	3625.000	922.677
7.551	4.363	3625.000	1267.969
7.718	4.283	3625.000	1040.587
7.569	4.282	3625.000	773.948
7.630	4.218	3625.000	889.859
7.743	4.238	3625.000	1113.916
7.711	4.294	3625.000	1169.105
7.639	4.208	3625.000	830.850
7.782	4.215	3625.000	1152.198
7.561	4.208	3625.000	970.904
7.675	4.242	3625.000	1115.334
7.681	4.310	3625.000	1031.090
7.781	4.234	3625.000	938.076
7.642	4.296	3625.000	1157.628
7.785	4.149	3625.000	1003.510
7.776	4.082	3625.000	906.366
7.770	4.168	3625.000	900.468
7.795	4.139	3625.000	1078.863
7.793	4.148	3625.000	758.847
7.800	4.136	3625.000	1037.855
7.789	4.093	3625.000	866.845
7.803	4.116	3625.000	551.028
7.640	4.201	3625.000	798.321
7.669	4.157	3625.000	904.943
7.732	4.200	3625.000	1053.465
7.770	4.084	3625.000	815.809
7.795	4.146	3625.000	938.858
7.702	4.120	3625.000	833.626
7.666	4.143	3625.000	1061.471
7.684	4.155	3625.000	662.999
7.723	4.078	3625.000	994.568
7.767	4.109	3625.000	1063.972
7.750	4.187	3625.000	934.336
7.778	4.210	3625.000	866.357
7.802	4.199	3625.000	1145.069
7.748	4.195	3625.000	1171.633
7.782	4.189	3625.000	1042.663
7.708	4.272	3625.000	968.662
7.545	4.327	3625.000	1084.877
7.528	4.398	3625.000	1093.614
7.711	4.260	3625.000	859.612
7.803	4.181	3625.000	828.987
7.697	4.282	3625.000	714.633
7.715	4.153	3625.000	919.917
7.775	4.149	3625.000	1221.510

120	4927.875	42.125	36.000	55000.000	3.910	3.879	4968.250	3.952	4930.250
121	4970.000	42.500	36.000	55000.000	3.915	3.883	4972.125	3.953	4992.625
122	5012.500	41.750	36.000	55000.000	3.914	3.879	5052.875	3.950	5014.500
123	5054.250	41.625	36.000	55000.000	3.908	3.872	5081.375	3.946	5056.625
124	5095.875	42.625	36.000	55000.000	3.912	3.872	5104.750	3.961	5098.250
125	5138.500	41.750	36.000	55000.000	3.903	3.864	5161.000	3.951	5140.625
126	5180.250	41.750	36.000	55000.000	3.906	3.870	5183.250	3.948	5182.375
127	5222.000	42.500	36.000	55000.000	3.910	3.874	5226.625	3.956	5224.250
128	5264.500	36.750	36.000	55000.000	3.897	3.857	5273.125	3.942	5278.125
129	5301.250	42.000	36.000	55000.000	3.904	3.859	5338.625	3.958	5340.250
130	5343.250	41.375	36.000	55000.000	3.907	3.864	5351.750	3.950	5365.375
131	5384.625	42.750	36.000	55000.000	3.918	3.867	5422.125	3.955	5425.875
132	5427.375	41.750	36.000	55000.000	3.903	3.839	5453.375	3.963	5429.375
133	5469.125	40.125	36.000	55000.000	3.906	3.859	5500.750	3.949	5499.500
134	5509.250	42.875	36.000	55000.000	3.912	3.857	5533.625	3.966	5529.875
135	5552.125	42.625	36.000	55000.000	3.912	3.869	5580.750	3.963	5554.250
136	5594.750	42.500	36.000	55000.000	3.911	3.864	5597.000	3.978	5597.125
137	5637.250	42.500	36.000	55000.000	3.909	3.869	5675.625	3.958	5678.125
138	5679.750	41.125	36.000	55000.000	3.907	3.846	5682.000	3.976	5687.875
139	5720.875	41.125	36.000	55000.000	3.918	3.835	5723.250	3.983	5722.750
140	5762.000	29.375	36.000	55000.000	3.910	3.847	5764.250	3.973	5771.000
141	5791.375	42.375	36.000	55000.000	3.912	3.829	5823.125	3.982	5823.000
142	5833.750	42.750	36.000	80000.000	3.912	3.857	5838.000	3.962	5840.125
143	5876.500	41.000	36.000	80000.000	3.915	3.864	5885.500	3.967	5881.000
144	5917.500	42.000	36.000	80000.000	3.913	3.869	5941.875	3.970	5919.625
145	5959.500	43.125	36.000	80000.000	3.909	3.859	5981.750	3.965	5962.250
146	6002.625	40.875	36.000	80000.000	3.899	3.848	6040.250	3.981	6040.375
147	6043.500	43.125	36.000	80000.000	3.916	3.862	6067.500	3.972	6061.375
148	6086.625	43.000	36.000	80000.000	3.911	3.858	6103.500	3.961	6095.625
149	6129.625	42.000	36.000	80000.000	3.915	3.871	6149.125	3.958	6154.000
150	6171.625	41.500	36.000	80000.000	3.915	3.888	6209.750	3.954	6180.500
151	6213.125	41.625	36.000	80000.000	3.899	3.856	6215.375	3.961	6215.500
152	6254.750	40.750	36.000	80000.000	3.910	3.868	6290.375	3.960	6263.250
153	6295.500	42.375	36.000	80000.000	3.906	3.864	6317.125	3.958	6304.375
154	6337.875	42.500	36.000	80000.000	3.909	3.840	6361.875	3.982	6359.750
155	6380.375	42.000	36.000	80000.000	3.903	3.833	6413.625	3.965	6389.375
156	6422.375	41.000	36.000	80000.000	3.909	3.849	6459.750	3.969	6429.250
157	6463.375	43.066	36.000	80000.000	3.914	3.833	6504.000	4.002	6486.875
158	6506.441	41.562	36.000	80000.000	3.910	3.829	6540.566	3.995	6510.066
159	6548.003	42.872	36.000	80000.000	3.915	3.841	6550.378	3.992	6554.878
160	6590.875	42.375	36.000	80000.000	3.911	3.842	6619.625	3.980	6619.375
161	6633.250	41.875	36.000	80000.000	3.912	3.862	6641.625	3.969	6639.625
162	6675.125	40.750	36.000	80000.000	3.919	3.871	6708.500	3.961	6683.875
163	6715.875	41.750	36.000	80000.000	3.910	3.838	6724.375	3.973	6724.500
164	6757.625	42.125	36.000	80000.000	3.914	3.848	6764.000	4.001	6761.750
165	6799.750	39.750	36.000	80000.000	3.885	3.832	6814.375	3.949	6813.875
166	6839.500	43.000	36.000	80000.000	3.918	3.865	6853.875	3.978	6854.000
167	6882.500	42.750	36.000	80000.000	3.905	3.863	6923.875	3.948	6919.000
168	6925.250	42.500	36.000	80000.000	3.913	3.856	6955.500	3.990	6952.000
169	6967.750	42.750	36.000	80000.000	3.913	3.846	6999.875	3.978	6972.750
170	7010.500	32.750	36.000	80000.000	3.903	3.838	7035.000	3.973	7020.500

0.402	0.358	4939.000	7.766	4930.375	9.822	10.534	4564.063	2644.549	2698.852
0.397	0.369	4978.750	7.770	5009.250	10.211	7.793	4703.892	2853.629	2669.157
0.398	0.357	5015.000	7.764	5052.875	9.398	10.719	4554.621	2630.431	2731.188
0.404	0.366	5060.375	7.756	5092.250	8.266	8.429	4671.472	2805.154	2817.569
0.400	0.358	5101.875	7.759	5104.750	12.006	10.455	4568.091	2650.571	2532.290
0.410	0.366	5151.500	7.737	5161.000	9.569	8.569	4664.306	2794.439	2718.193
0.406	0.375	5183.250	7.752	5182.625	8.974	6.309	4779.585	2966.811	2763.537
0.402	0.350	5231.250	7.753	5226.625	10.778	12.421	4467.782	2500.583	2625.946
0.415	0.368	5267.250	7.735	5298.125	7.387	7.926	4697.120	2843.503	2884.637
0.408	0.370	5303.125	7.730	5340.750	11.478	7.493	4719.213	2876.540	2572.555
0.405	0.347	5347.250	7.741	5367.625	9.406	13.150	4430.618	2445.014	2730.628
0.394	0.361	5405.875	7.740	5422.125	10.517	9.691	4607.089	2708.885	2645.838
0.410	0.381	5433.250	7.692	5453.375	12.683	4.687	4862.353	3090.571	2480.630
0.406	0.383	5477.000	7.729	5500.750	9.079	4.141	4890.218	3132.238	2755.539
0.401	0.358	5541.750	7.730	5540.375	13.491	10.433	4569.192	2652.218	2418.987
0.400	0.348	5556.500	7.748	5587.875	12.617	12.958	4440.426	2459.678	2485.691
0.401	0.367	5604.625	7.742	5612.250	16.478	8.273	4679.410	2817.023	2260.092
0.404	0.345	5678.625	7.754	5665.000	11.350	13.658	4404.682	2406.232	2582.298
0.405	0.344	5719.125	7.720	5682.000	15.858	13.987	4387.929	2386.495	2291.554
0.395	0.365	5728.125	7.708	5723.250	17.529	8.737	4655.732	2781.619	2206.713
0.403	0.352	5764.375	7.719	5781.875	15.090	11.901	4494.347	2540.305	2330.509
0.401	0.371	5801.375	7.684	5823.125	17.254	7.306	4728.723	2890.760	2220.702
0.400	0.355	5837.250	7.716	5838.000	12.737	11.649	6588.665	3108.409	3027.413
0.397	0.340	5879.375	7.748	5885.500	14.055	15.536	6298.788	2818.890	2929.219
0.400	0.373	5936.125	7.741	5941.875	14.709	7.196	6920.743	3440.079	2880.539
0.403	0.356	6001.375	7.742	5961.750	13.481	11.512	6598.933	3118.665	2971.948
0.414	0.352	6040.000	7.708	6040.250	17.627	12.370	6534.909	3054.720	2663.204
0.397	0.358	6048.875	7.735	6067.500	15.249	10.909	6643.864	3163.540	2840.323
0.401	0.358	6093.500	7.739	6103.750	12.452	10.867	6647.003	3166.676	3048.643
0.397	0.354	6135.875	7.759	6149.125	11.834	11.874	6571.934	3091.699	3094.637
0.398	0.353	6172.875	7.788	6210.750	10.878	12.143	6551.835	3071.625	3165.827
0.414	0.366	6215.875	7.726	6215.375	12.686	8.867	6796.145	3315.634	3031.155
0.402	0.361	6256.500	7.748	6285.000	12.364	10.127	6702.149	3221.754	3055.145
0.406	0.365	6296.625	7.734	6331.500	11.779	9.186	6772.333	3291.851	3098.749
0.403	0.369	6376.875	7.692	6361.875	17.828	8.320	6836.914	3356.353	2648.207
0.410	0.368	6405.500	7.675	6418.625	13.525	8.486	6824.541	3343.995	2968.724
0.404	0.363	6430.375	7.703	6459.750	14.536	9.811	6725.734	3245.309	2893.389
0.399	0.365	6481.750	7.672	6504.000	22.711	9.291	6764.546	3284.074	2284.470
0.402	0.363	6509.566	7.677	6507.691	21.111	9.613	6740.509	3260.067	2403.665
0.397	0.359	6572.753	7.720	6570.503	20.350	10.695	6659.827	3179.484	2460.357
0.402	0.364	6593.250	7.692	6618.625	17.376	9.501	6748.838	3268.385	2681.867
0.400	0.362	6637.375	7.737	6641.625	14.601	9.918	6717.777	3237.363	2888.548
0.393	0.351	6680.500	7.751	6708.500	12.661	12.661	6513.191	3033.029	3033.076
0.403	0.360	6719.125	7.689	6724.375	15.601	10.367	6684.274	3203.901	2814.058
0.399	0.369	6761.500	7.702	6764.000	22.425	8.298	6838.572	3358.009	2305.789
0.427	0.390	6828.625	7.674	6820.750	9.470	3.027	7231.638	3810.400	3270.705
0.395	0.347	6843.875	7.746	6856.125	16.911	13.669	6438.026	2957.957	2716.526
0.408	0.370	6890.875	7.728	6923.875	9.254	7.949	6864.638	3384.043	3286.820
0.400	0.358	6926.250	7.715	6955.500	19.741	10.843	6648.780	3168.450	2505.720
0.400	0.360	7007.500	7.712	6999.875	16.776	10.407	6681.329	3200.959	2726.545
0.409	0.316	7020.375	7.691	7035.000	15.508	21.442	5858.379	2379.023	2820.975

7.712	4.258	3625.000	939.063
7.630	4.270	3625.000	1078.892
7.784	4.275	3625.000	929.621
7.768	4.193	3625.000	1046.472
7.654	4.198	3625.000	943.091
7.614	4.243	3625.000	1039.306
7.749	4.199	3625.000	1154.585
7.724	4.167	3625.000	842.782
7.544	4.321	3625.000	1072.120
7.666	4.246	3625.000	1094.213
7.747	4.207	3625.000	805.618
7.671	4.274	3625.000	982.089
7.716	4.281	3625.000	1237.353
7.732	4.246	3625.000	1265.218
7.644	4.178	3625.000	944.192
7.671	4.255	3625.000	815.426
7.692	4.189	3625.000	1054.410
7.606	4.286	3625.000	779.682
7.751	4.200	3625.000	762.929
7.768	4.220	3625.000	1030.732
7.750	4.176	3625.000	869.347
7.740	4.203	3625.000	1103.723
7.741	4.364	3625.000	2963.665
7.781	4.216	3625.000	2673.788
7.783	4.180	3625.000	3295.743
7.784	4.254	3625.000	2973.933
7.726	4.158	3625.000	2909.909
7.717	4.098	3625.000	3018.864
7.637	4.258	3625.000	3022.003
7.749	4.219	3625.000	2946.934
7.673	4.222	3625.000	2926.835
7.709	4.241	3625.000	3171.145
7.744	4.223	3625.000	3077.149
7.765	4.219	3625.000	3147.333
7.722	4.232	3625.000	3211.914
7.742	4.216	3625.000	3199.541
7.731	4.241	3625.000	3100.734
7.715	4.175	3625.000	3139.546
7.692	4.185	3625.000	3115.509
7.681	4.182	3625.000	3034.827
7.761	4.290	3625.000	3123.838
7.643	4.344	3625.000	3092.777
7.779	4.180	3625.000	2888.191
7.734	4.287	3625.000	3059.274
7.754	4.178	3625.000	3213.572
7.708	4.357	3625.000	3606.638
7.659	4.192	3625.000	2813.026
7.720	4.257	3625.000	3239.638
7.720	4.232	3625.000	3023.780
7.712	4.303	3625.000	3056.329
7.729	4.155	3625.000	2233.379

HR Vertilog

Magnetic Flux Leakage Inspection

Advanced Analysis

Company	Southern California Gas Company
Well	Fernando Fee 35B
Field	Aliso Canyon
County	Los Angeles
State	California
Location: 146' S & 659' E From Station 84 3	

Section 34	Township 3N	Range 16W	

Date	Jul. 14, 2016
Service Order	US108271
Recorded by	B. Deal
Witnessed by	T. McMahon
API Serial No.	04-037-21458

Permanent Datum:	G.L.	Elevation: 1674.000 ft.		Depth	7331.000
Log Measured From:	K.B.	15.000 ft. above Perm. Datum		Btm. Log Interval	7049.900
Drilling Measured From:	K.B.	15.000 ft. above Perm. Datum		Top Log Interval	14.610
				Fluid Type	KCL

Casing Data

Size	Weight	Grade	From	To	Length
8 5/8 inch	36.0 lb/ft	K-55	Surface	5835	5835.0
8 5/8 inch	36.0 lb/ft	N-80	5835	7229	1394.0
13 3/8 inch	54.5 lb/ft	K-55	Surface	830	830.0
5 inch liner	18.0 lb/ft	N-80	7100	7331	231.0

Software Version 6.0.0.0

Equipment Data

Run	Trip	Tool Type	Tool Series	Serial Number	Position
1	1	HRVRT MFL	4997	PA10409830	LOWER
1	1	HRVRT MFL	4997	QA10409822	UPPER
1	1	HRVRT TELEM	4993	EA10360726	

Calibration Data

Calibration File Name	4997-8-001-PA10409822-U.CAL
Date of Calibration	06/16/2016 16:01

Calibration Identifier	A00C9D82-DCC8-4973-8454-0F98E8079F2F
Tool Number	4997-00
Calibrator Number	4997-8-001
Calibrator Size	(8-5/8 In - 219 mm)
Calibration Source File	20160616_141623_MEM.MVL
Calibration Software Rev	Microvision 32-bit 7.3.4.0
Comment	RMA1333

Calibration Data

Calibration File Name	4997-8-001-QA10409830-L.CAL
Date of Calibration	06/16/2016 16:01
Calibration Identifier	A00C9D82-DCC8-4973-8454-0F98E8079F2F
Tool Number	4997-00
Calibrator Number	4997-8-001
Calibrator Size	(8-5/8 In - 219 mm)
Calibration Source File	20160616_141623_MEM.MVL
Calibration Software Rev	Microvision 32-bit 7.3.4.0
Comment	RMA1333

Interpretation

HRVRT analysis was depth correlated Welex Micro-Seismogram logged 14 Sep 1974.

The top joint (JT-1), joint 98 (JT-98) and joint 140 (JT-140) are shorter joints.

15.54 ft	Hardware -External Casing Head Response.
829.00 ft	Hardware - Bottom of 13 3/8" External Casing.
3815.45 ft	Hardware - Multiple Centralizers can be seen throughout the logged interval, see the Feature List for a complete centralizer listing.
3984.60 ft	Hardware - Centralizer - not over collar.
3987.46 ft	Hardware - Stage Collar.

Interpretation was zoned for variable casing weights and grades.

5837.43 ft	Collar - 8 5/8" Casing Grade change; K-55 36 lb/ft above and N-80 36 lb/ft below.

Joint Interpretation Summary

Joint	From	To	Length	Class	Max Depth	Position	Type	ID/OD
1	14.61	25.12	10.51	Class 1	-	-	-	-
2	25.12	67.28	42.16	Class 1	-	-	-	-
3	67.28	110.17	42.89	Class 1	-	-	-	-
4	110.17	151.93	41.76	Class 1	-	-	-	-

5	151.93	193.57	41.64	Class	1	-	-	-	-
6	193.57	234.71	41.14	Class	1	-	-	-	-
7	234.71	276.80	42.09	Class	1	-	-	-	-
8	276.80	315.29	38.49	Class	1	-	-	-	-
9	315.29	355.91	40.62	Class	1	-	-	-	-
10	355.91	395.64	39.73	Class	1	-	-	-	-
11	395.64	438.85	43.21	Class	1	-	-	-	-
12	438.85	479.85	41.00	Class	1	-	-	-	-
13	479.85	521.86	42.01	Class	1	-	-	-	-
14	521.86	560.94	39.08	Class	1	-	-	-	-
15	560.94	602.52	41.58	Class	1	-	-	-	-
16	602.52	645.30	42.78	Class	1	-	-	-	-
17	645.30	688.07	42.77	Class	1	-	-	-	-
18	688.07	728.53	40.46	Class	1	-	-	-	-
19	728.53	772.22	43.69	Class	1	-	-	-	-
20	772.22	815.55	43.33	Class	1	-	-	-	-
21	815.55	857.39	41.84	Class	1	-	-	-	-
22	857.39	899.51	42.12	Class	1	-	-	-	-
23	899.51	940.76	41.25	Class	1	-	-	-	-
24	940.76	982.16	41.40	Class	1	-	-	-	-
25	982.16	1023.29	41.13	Class	1	-	-	-	-
26	1023.29	1063.82	40.53	Class	1	-	-	-	-
27	1063.82	1103.66	39.84	Class	1	-	-	-	-
28	1103.66	1145.25	41.59	Class	1	-	-	-	-
29	1145.25	1187.29	42.04	Class	1	-	-	-	-
30	1187.29	1230.74	43.45	Class	1	-	-	-	-
31	1230.74	1272.31	41.57	Class	1	-	-	-	-
32	1272.31	1314.21	41.90	Class	1	-	-	-	-
33	1314.21	1355.91	41.70	Class	1	-	-	-	-
34	1355.91	1395.67	39.76	Class	1	-	-	-	-
35	1395.67	1437.23	41.56	Class	1	-	-	-	-
36	1437.23	1478.61	41.38	Class	1	-	-	-	-
37	1478.61	1521.61	43.00	Class	1	-	-	-	-
38	1521.61	1562.81	41.20	Class	1	-	-	-	-
39	1562.81	1604.69	41.88	Class	1	-	-	-	-
40	1604.69	1643.71	39.02	Class	1	-	-	-	-
41	1643.71	1686.42	42.71	Class	1	-	-	-	-
42	1686.42	1727.46	41.04	Class	1	-	-	-	-
43	1727.46	1768.46	41.00	Class	1	-	-	-	-
44	1768.46	1810.38	41.92	Class	1	-	-	-	-
45	1810.38	1852.05	41.67	Class	1	-	-	-	-
46	1852.05	1895.18	43.13	Class	1	-	-	-	-
47	1895.18	1937.08	41.90	Class	1	-	-	-	-
48	1937.08	1978.19	41.11	Class	1	-	-	-	-
49	1978.19	2019.05	40.86	Class	1	-	-	-	-
50	2019.05	2060.44	41.39	Class	1	-	-	-	-
51	2060.44	2103.07	42.63	Class	1	-	-	-	-
52	2103.07	2144.14	41.07	Class	1	-	-	-	-
53	2144.14	2185.84	41.70	Class	1	17.0%	2158.84	ISO	OD
54	2185.84	2227.23	41.39	Class	1	19.0%	2197.13	ISO	OD
55	2227.23	2269.24	42.01	Class	2	21.0%	2242.62	ISO	OD
56	2269.24	2310.32	41.08	Class	1	-	-	-	-
57	2310.32	2353.87	43.55	Class	1	15.0%	2318.22	ISO	OD
58	2353.87	2394.92	41.05	Class	1	-	-	-	-
59	2394.92	2435.92	41.00	Class	1	-	-	-	-
60	2435.92	2477.11	41.19	Class	1	-	-	-	-
61	2477.11	2518.93	41.82	Class	1	-	-	-	-
62	2518.93	2561.61	42.68	Class	1	-	-	-	-
63	2561.61	2603.89	42.28	Class	1	-	-	-	-
64	2603.89	2646.18	42.29	Class	1	15.0%	2635.20	ISO	OD
65	2646.18	2687.38	41.20	Class	1	-	-	-	-
66	2687.38	2729.58	42.20	Class	1	-	-	-	-
67	2729.58	2772.88	43.30	Class	1	-	-	-	-
68	2772.88	2815.07	42.19	Class	1				

68	2772.88	2815.07	42.19	Class 1	-	-	-	-
69	2815.07	2856.73	41.66	Class 1	-	-	-	-
70	2856.73	2898.44	41.71	Class 1	-	-	-	-
71	2898.44	2940.32	41.88	Class 1	-	-	-	-
72	2940.32	2982.83	42.51	Class 1	-	-	-	-
73	2982.83	3025.48	42.65	Class 1	-	-	-	-
74	3025.48	3067.05	41.57	Class 1	-	-	-	-
75	3067.05	3109.08	42.03	Class 1	-	-	-	-
76	3109.08	3148.06	38.98	Class 1	-	-	-	-
77	3148.06	3190.40	42.34	Class 1	-	-	-	-
78	3190.40	3232.71	42.31	Class 1	-	-	-	-
79	3232.71	3274.56	41.85	Class 1	-	-	-	-
80	3274.56	3315.65	41.09	Class 1	-	-	-	-
81	3315.65	3357.77	42.12	Class 1	-	-	-	-
82	3357.77	3400.67	42.90	Class 1	-	-	-	-
83	3400.67	3441.93	41.26	Class 1	-	-	-	-
84	3441.93	3484.33	42.40	Class 1	-	-	-	-
85	3484.33	3525.30	40.97	Class 1	-	-	-	-
86	3525.30	3567.46	42.16	Class 1	-	-	-	-
87	3567.46	3608.34	40.88	Class 1	-	-	-	-
88	3608.34	3651.02	42.68	Class 1	-	-	-	-
89	3651.02	3688.89	37.87	Class 1	-	-	-	-
90	3688.89	3731.09	42.20	Class 1	-	-	-	-
91	3731.09	3773.37	42.28	Class 1	-	-	-	-
92	3773.37	3815.47	42.10	Class 1	-	-	-	-
93	3815.47	3859.01	43.54	Class 1	-	-	-	-
94	3859.01	3901.84	42.83	Class 1	-	-	-	-
95	3901.84	3944.10	42.26	Class 1	-	-	-	-
96	3944.10	3988.27	44.17	Class 1	15.0%	3979.22	ISO	OD
97	3988.27	4031.12	42.85	Class 1	-	-	-	-
98	4031.12	4058.52	27.40	Class 1	-	-	-	-
99	4058.52	4100.02	41.50	Class 1	-	-	-	-
100	4100.02	4143.26	43.24	Class 1	-	-	-	-
101	4143.26	4185.14	41.88	Class 1	-	-	-	-
102	4185.14	4227.73	42.59	Class 1	-	-	-	-
103	4227.73	4269.40	41.67	Class 1	-	-	-	-
104	4269.40	4309.08	39.68	Class 1	-	-	-	-
105	4309.08	4351.98	42.90	Class 1	-	-	-	-
106	4351.98	4394.38	42.40	Class 1	-	-	-	-
107	4394.38	4435.99	41.61	Class 1	-	-	-	-
108	4435.99	4478.39	42.40	Class 1	-	-	-	-
109	4478.39	4520.91	42.52	Class 1	-	-	-	-
110	4520.91	4559.26	38.35	Class 1	-	-	-	-
111	4559.26	4600.54	41.28	Class 1	-	-	-	-
112	4600.54	4642.04	41.50	Class 1	-	-	-	-
113	4642.04	4683.11	41.07	Class 1	-	-	-	-
114	4683.11	4725.33	42.22	Class 1	-	-	-	-
115	4725.33	4765.11	39.78	Class 1	-	-	-	-
116	4765.11	4807.61	42.50	Class 1	-	-	-	-
117	4807.61	4847.01	39.40	Class 1	-	-	-	-
118	4847.01	4888.72	41.71	Class 1	-	-	-	-
119	4888.72	4930.53	41.81	Class 1	-	-	-	-
120	4930.53	4972.76	42.23	Class 1	-	-	-	-
121	4972.76	5015.40	42.64	Class 1	-	-	-	-
122	5015.40	5057.06	41.66	Class 1	-	-	-	-
123	5057.06	5098.89	41.83	Class 1	-	-	-	-
124	5098.89	5141.31	42.42	Class 1	-	-	-	-
125	5141.31	5183.34	42.03	Class 1	-	-	-	-
126	5183.34	5225.15	41.81	Class 1	-	-	-	-
127	5225.15	5267.72	42.57	Class 1	-	-	-	-
128	5267.72	5304.53	36.81	Class 1	-	-	-	-
129	5304.53	5346.26	41.73	Class 1	-	-	-	-
130	5346.26	5387.93	41.67	Class 1	-	-	-	-
131	5387.93	5430.38	42.45	Class 1	-	-	-	-

132	5430.38	5472.58	42.20	Class	1	-	-	-	-
133	5472.58	5512.88	40.30	Class	1	-	-	-	-
134	5512.88	5555.31	42.43	Class	1	-	-	-	-
135	5555.31	5598.00	42.69	Class	1	-	-	-	-
136	5598.00	5640.52	42.52	Class	1	-	-	-	-
137	5640.52	5682.91	42.39	Class	1	-	-	-	-
138	5682.91	5724.06	41.15	Class	1	-	-	-	-
139	5724.06	5765.91	41.85	Class	1	-	-	-	-
140	5765.91	5795.27	29.36	Class	1	-	-	-	-
141	5795.27	5837.43	42.16	Class	1	-	-	-	-
142	5837.43	5880.12	42.69	Class	1	-	-	-	-
143	5880.12	5921.23	41.11	Class	1	-	-	-	-
144	5921.23	5963.62	42.39	Class	1	-	-	-	-
145	5963.62	6005.59	41.97	Class	1	-	-	-	-
146	6005.59	6047.57	41.98	Class	1	-	-	-	-
147	6047.57	6090.23	42.66	Class	1	-	-	-	-
148	6090.23	6132.68	42.45	Class	1	-	-	-	-
149	6132.68	6175.52	42.84	Class	1	-	-	-	-
150	6175.52	6216.65	41.13	Class	1	-	-	-	-
151	6216.65	6258.56	41.91	Class	1	-	-	-	-
152	6258.56	6299.19	40.63	Class	1	-	-	-	-
153	6299.19	6341.27	42.08	Class	1	-	-	-	-
154	6341.27	6384.11	42.84	Class	1	-	-	-	-
155	6384.11	6426.29	42.18	Class	1	-	-	-	-
156	6426.29	6467.76	41.47	Class	1	-	-	-	-
157	6467.76	6510.25	42.49	Class	1	-	-	-	-
158	6510.25	6552.00	41.75	Class	1	-	-	-	-
159	6552.00	6594.93	42.93	Class	1	-	-	-	-
160	6594.93	6637.29	42.36	Class	1	-	-	-	-
161	6637.29	6679.41	42.12	Class	1	-	-	-	-
162	6679.41	6720.36	40.95	Class	1	-	-	-	-
163	6720.36	6762.91	42.55	Class	1	-	-	-	-
164	6762.91	6805.15	42.24	Class	1	-	-	-	-
165	6805.15	6844.56	39.41	Class	1	-	-	-	-
166	6844.56	6887.15	42.59	Class	1	17.0%	6867.55	ISO	ID
167	6887.15	6929.61	42.46	Class	2	26.0%	6907.94	ISO	ID
168	6929.61	6972.45	42.84	Class	1	18.0%	6969.86	ISO	ID
169	6972.45	7015.17	42.72	Class	1	-	-	-	-
170	7015.17	7049.90	34.73	Class	1	18.0%	7025.67	ISO	ID

Southern California Gas Company Fernando Fee 35B

File 20160714_081635_RSP_0_0_0_0_0.mvl

Main Log
5" / 100'

Class 1	Class 2	Class 3	Class 4
0 - 20%	20 - 40%	40 - 60%	60 - 100%

DIS

10.0 /div

FL
Axial

10.0 /div

MAX
DIS

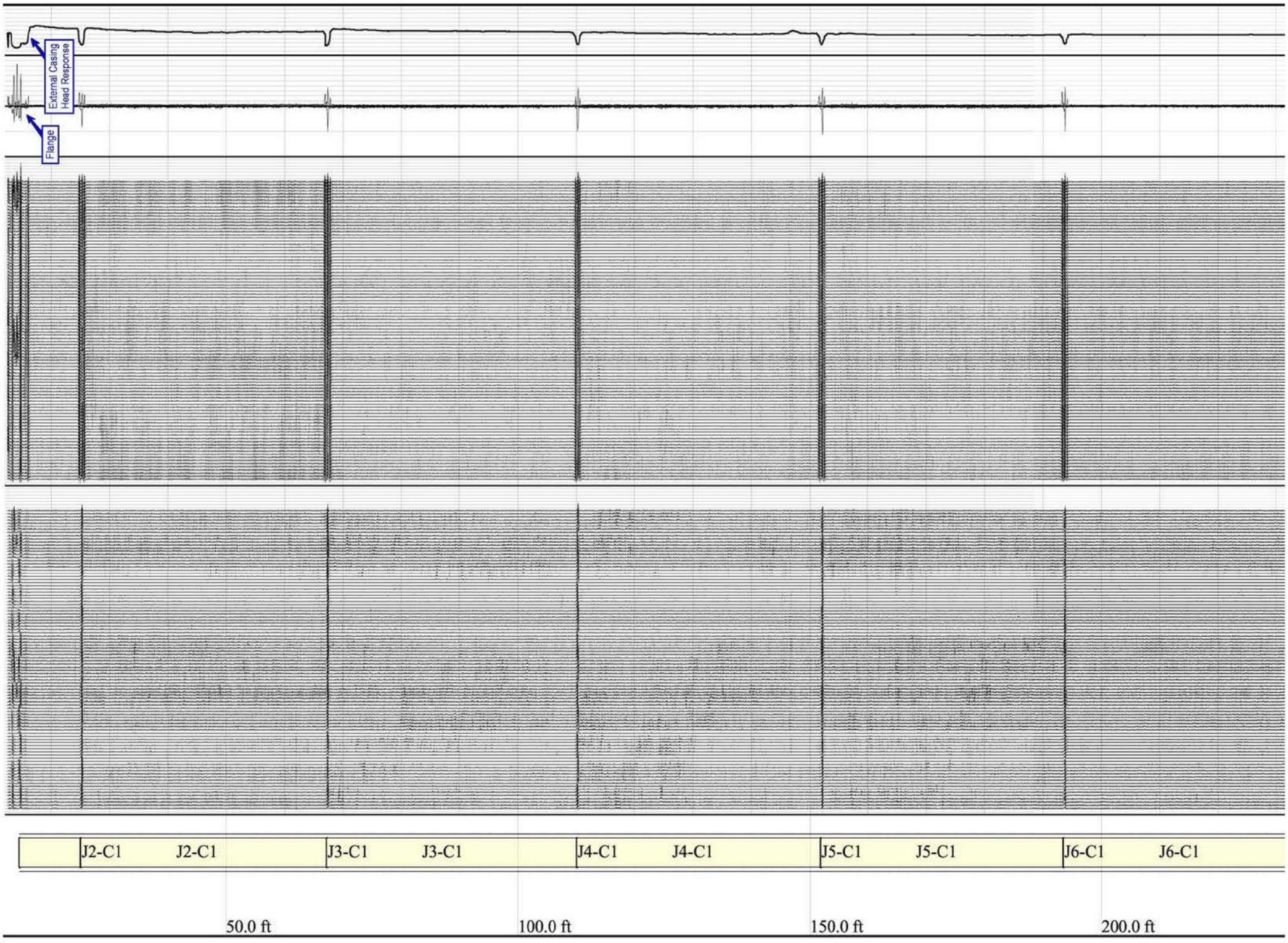
150

MAX
FL
Axial

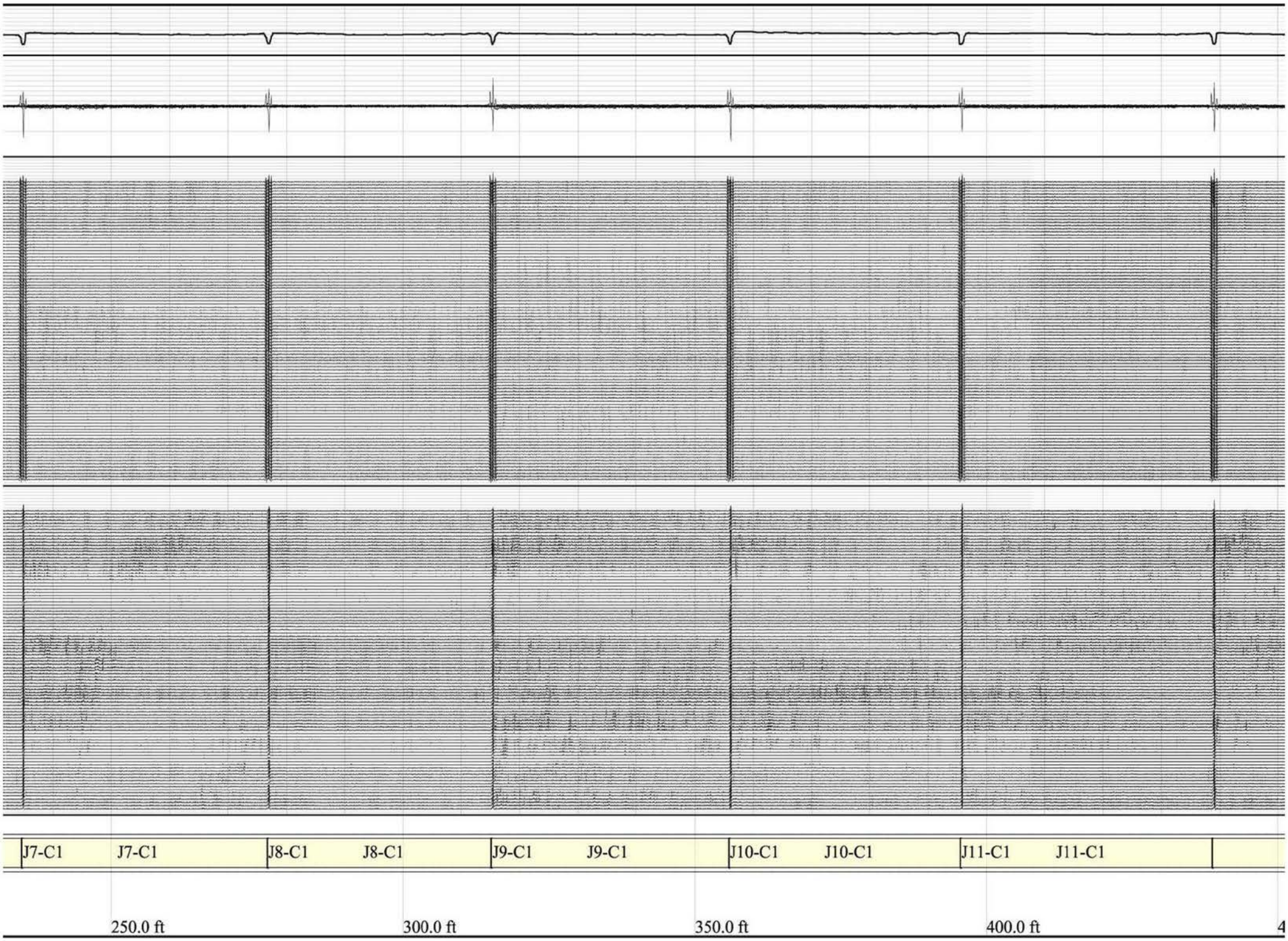
0 0

Axial
BKG

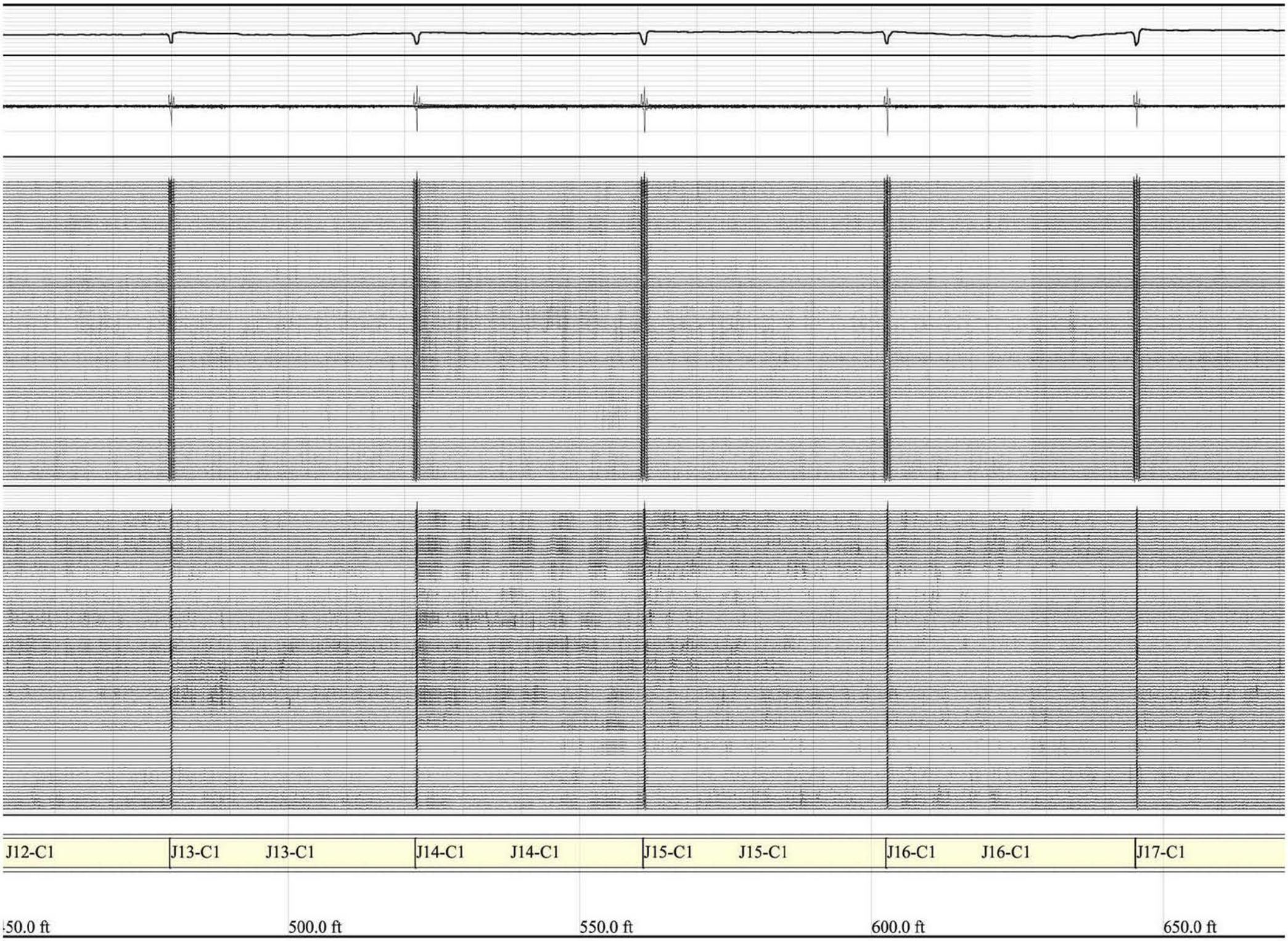
10010.0 /div



SoCalGas-7.0602



SoCalGas-7.0603



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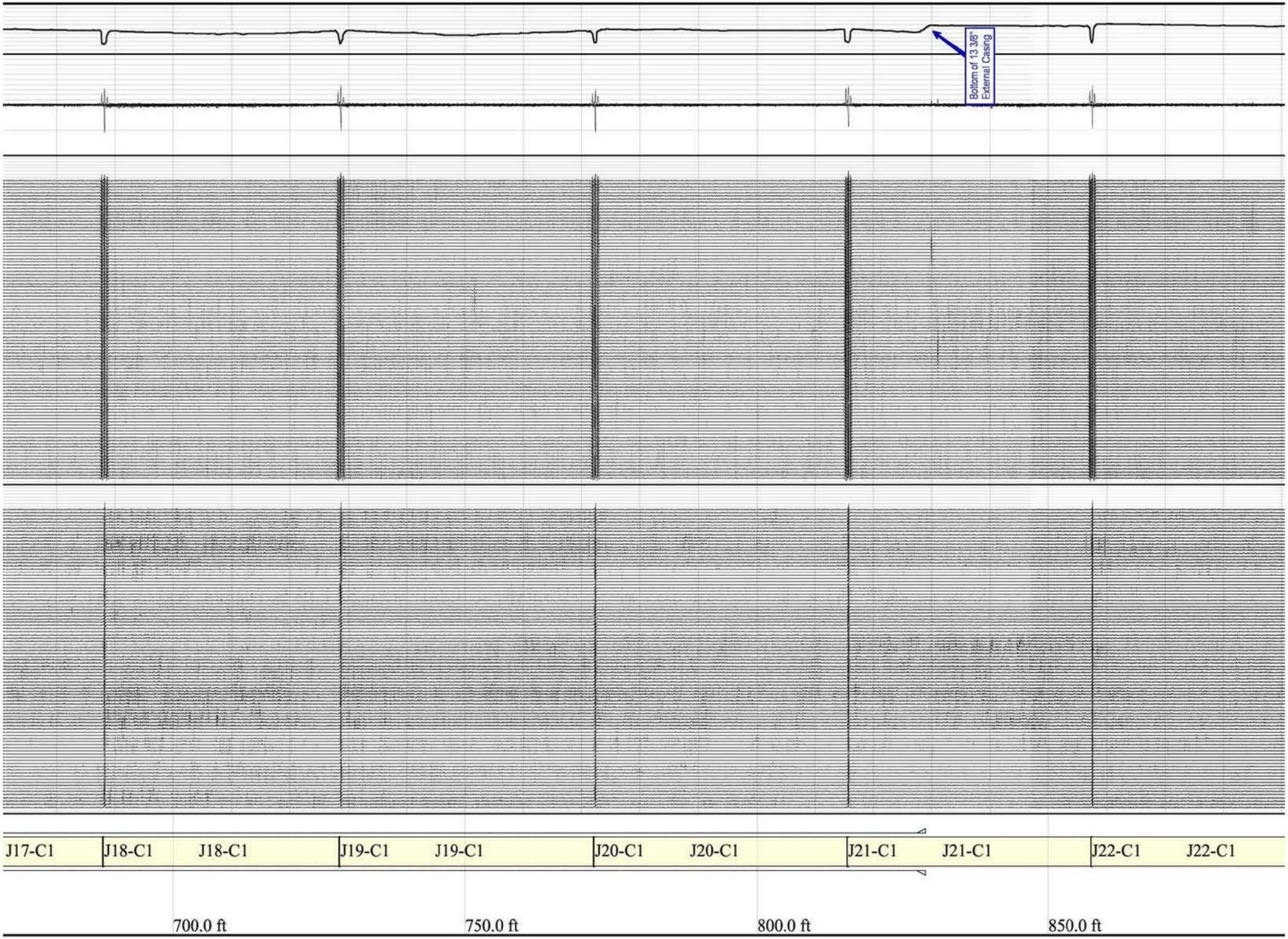
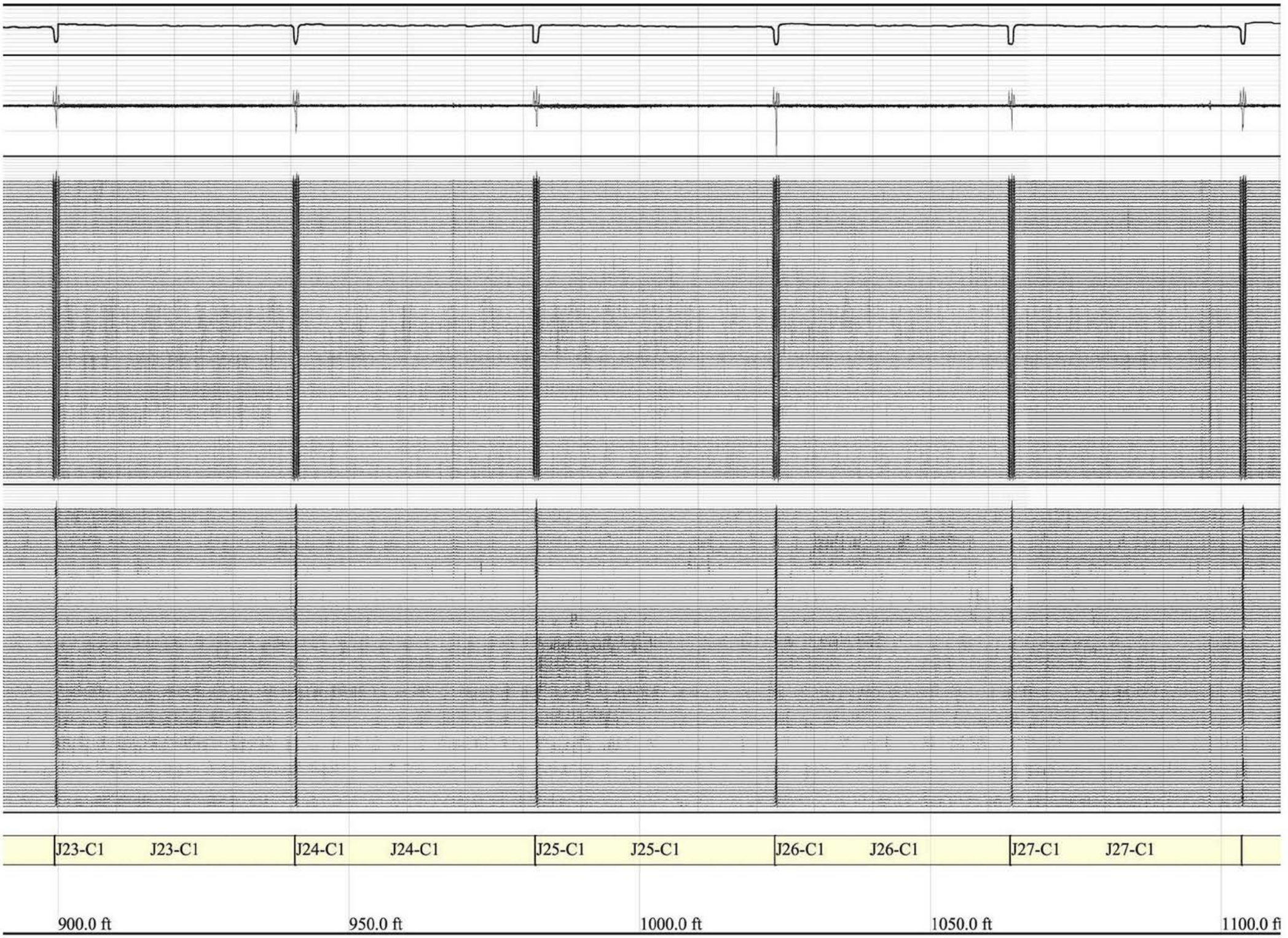


SoCalGas-7.0605



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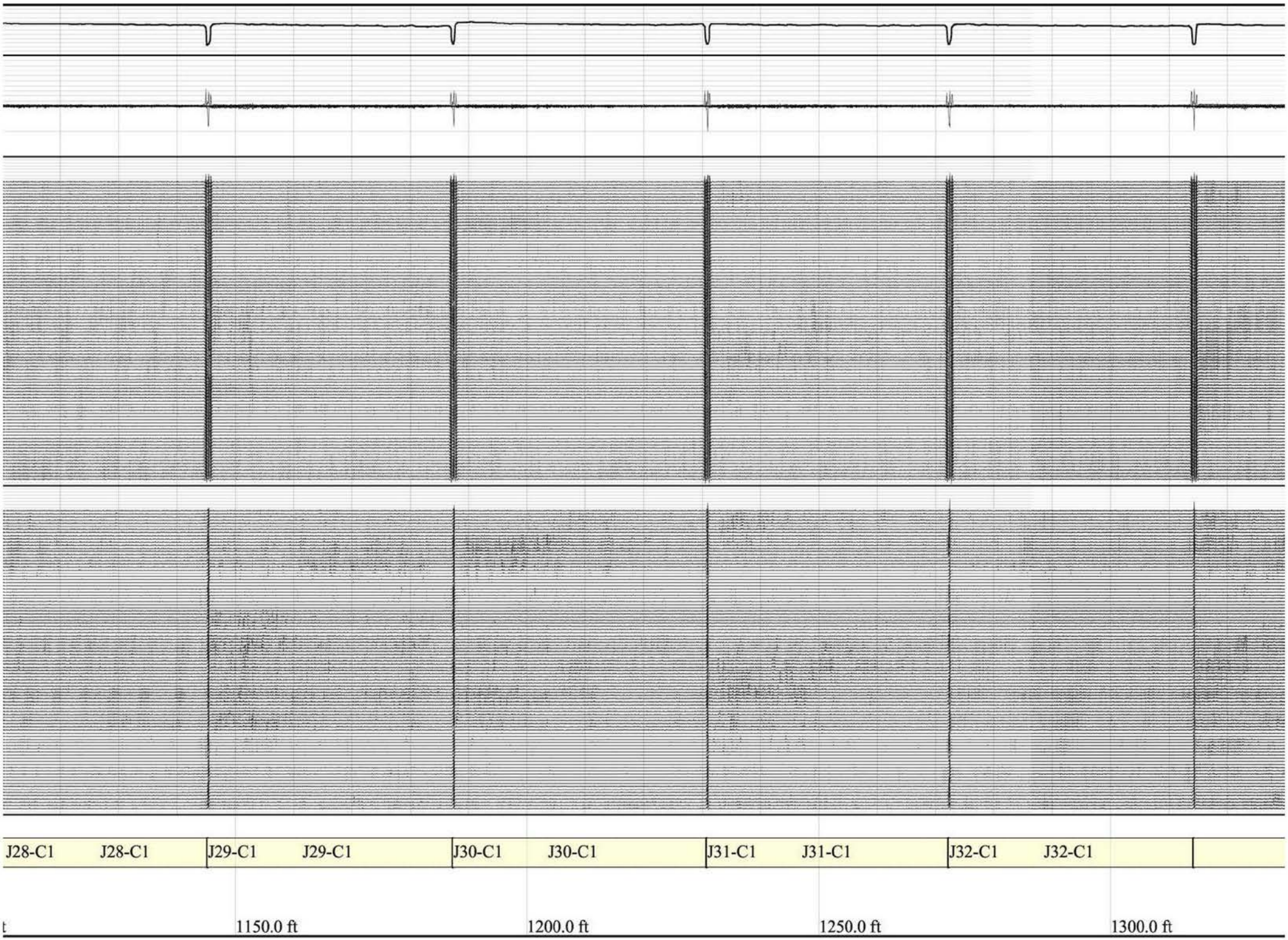

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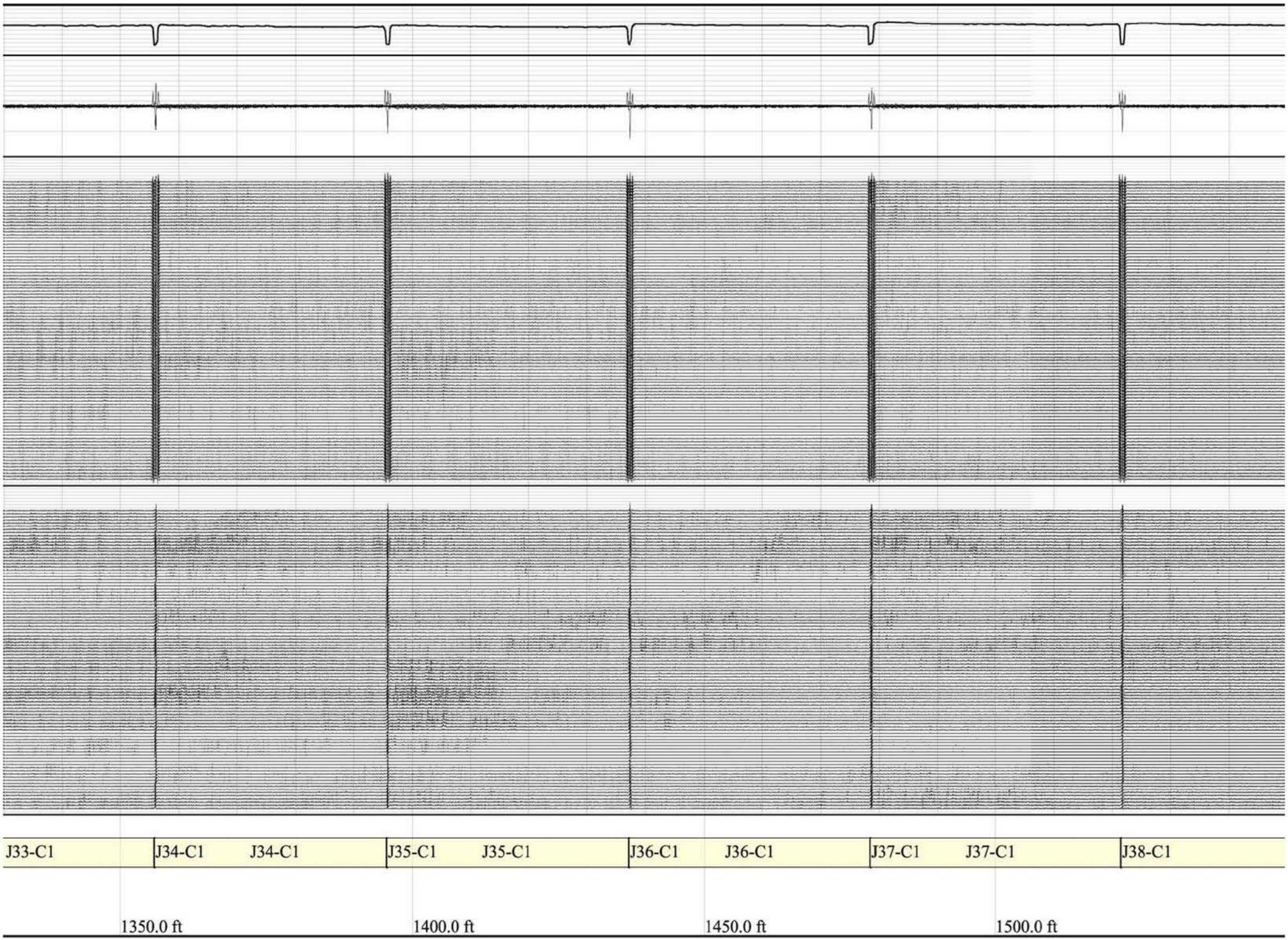

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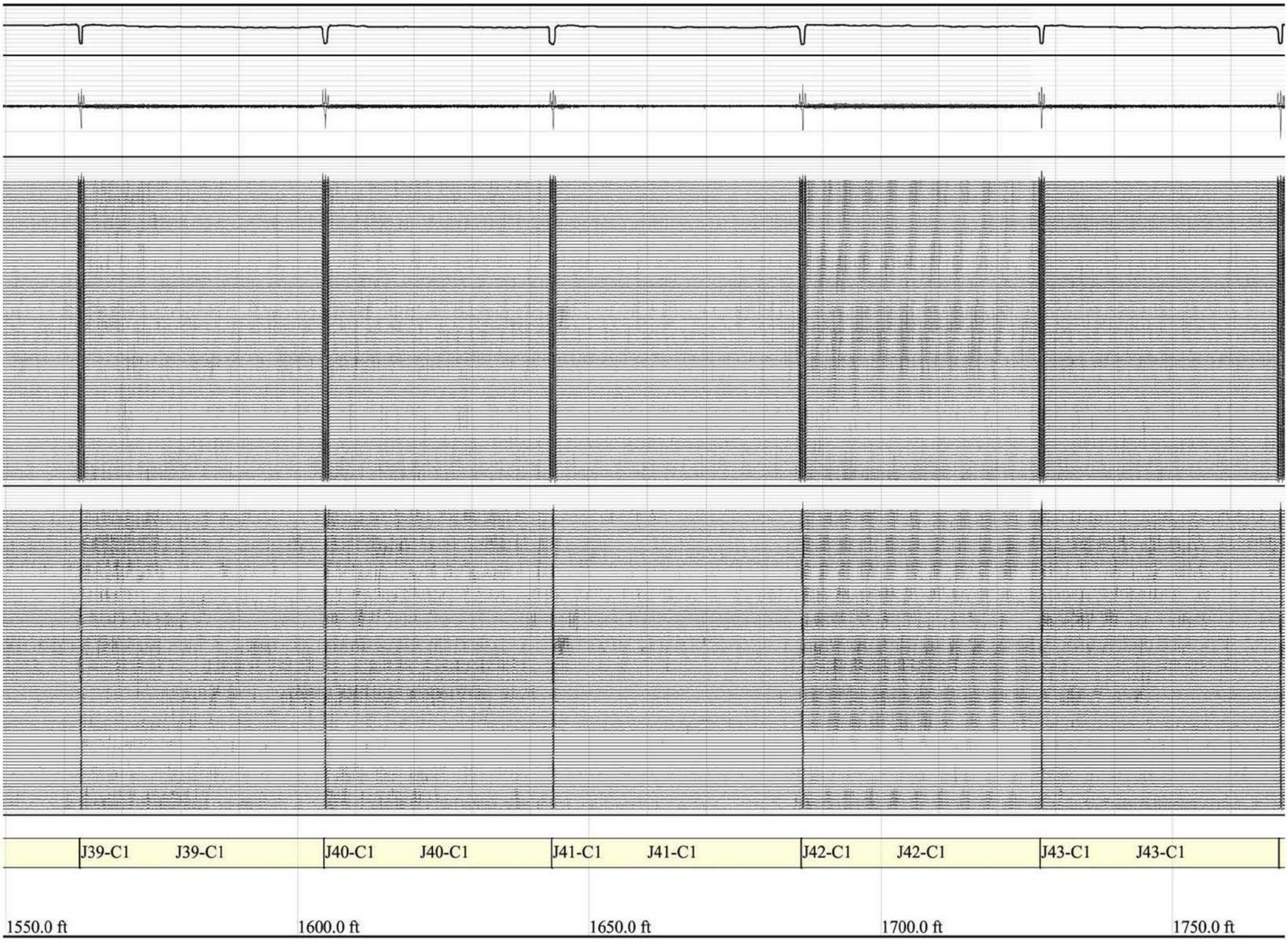
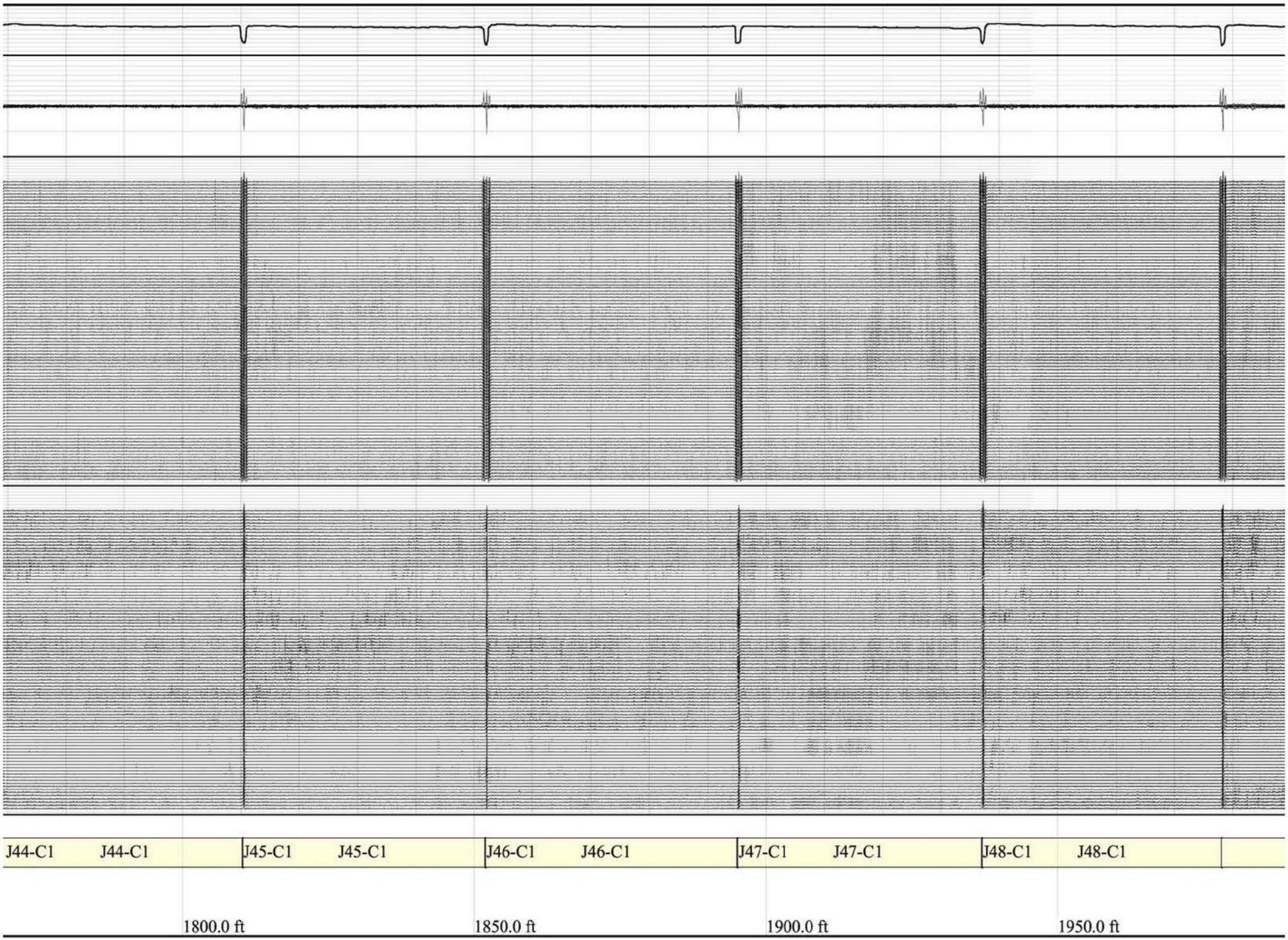


SoCalGas-7.0609



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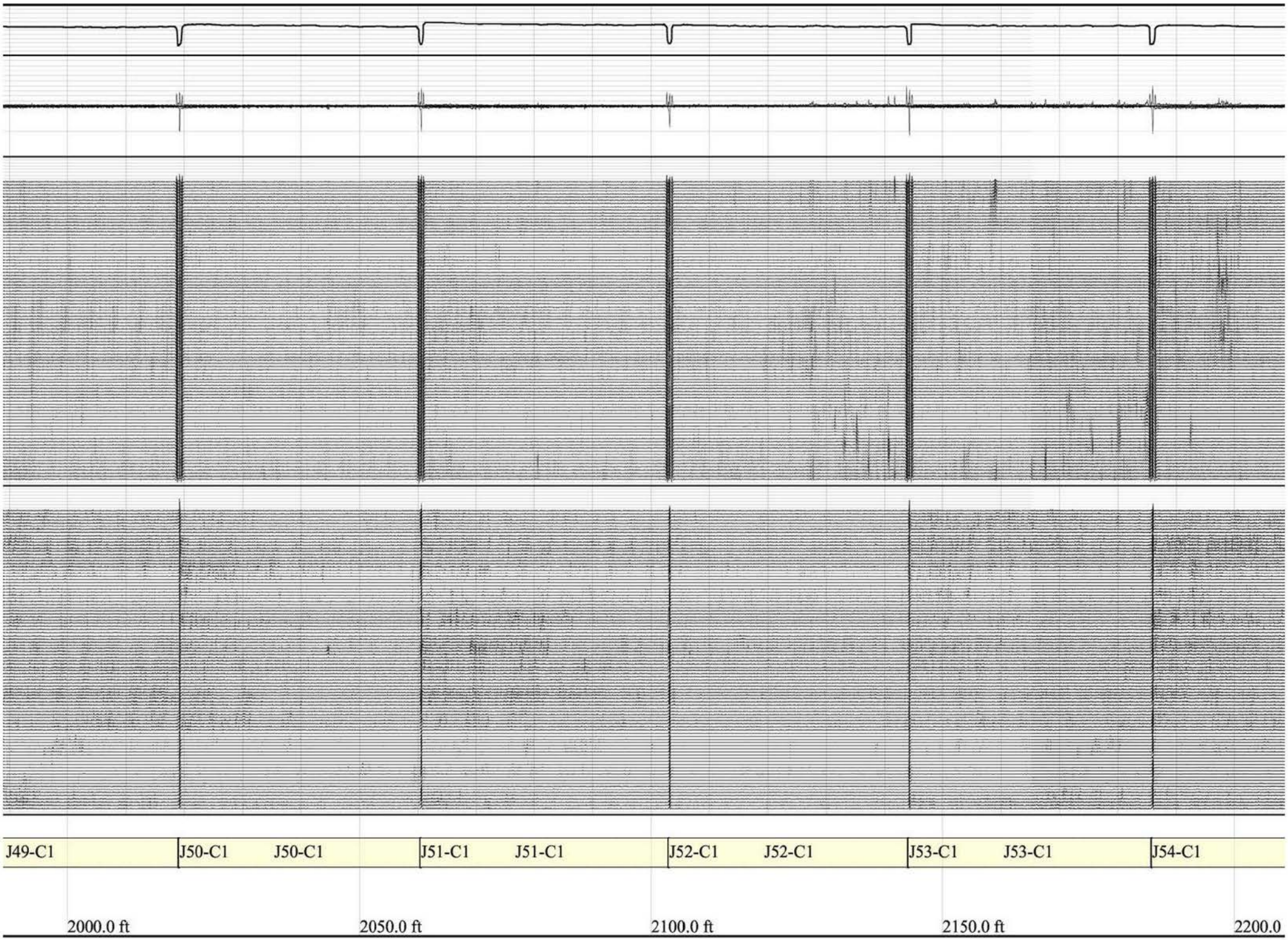

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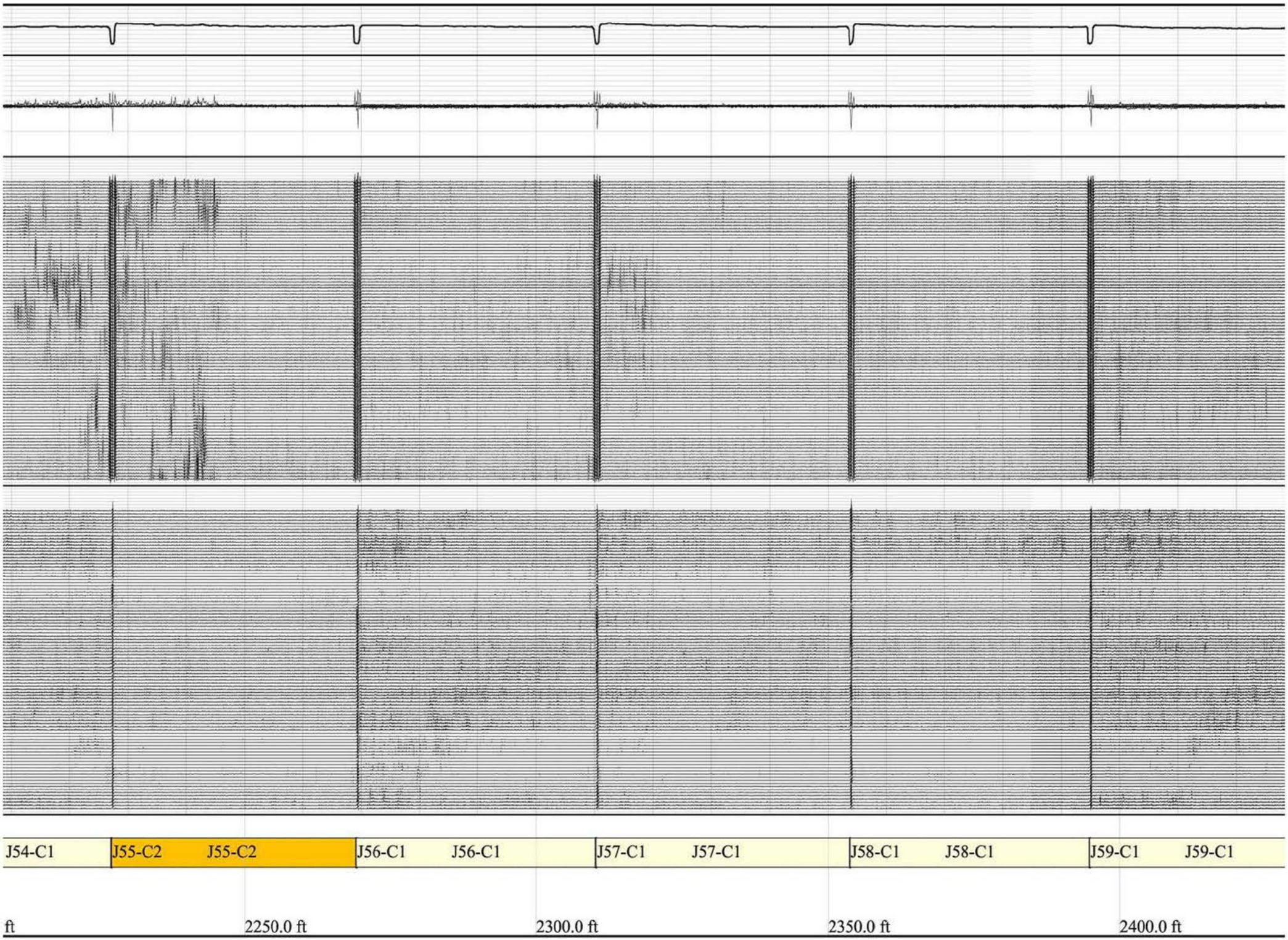

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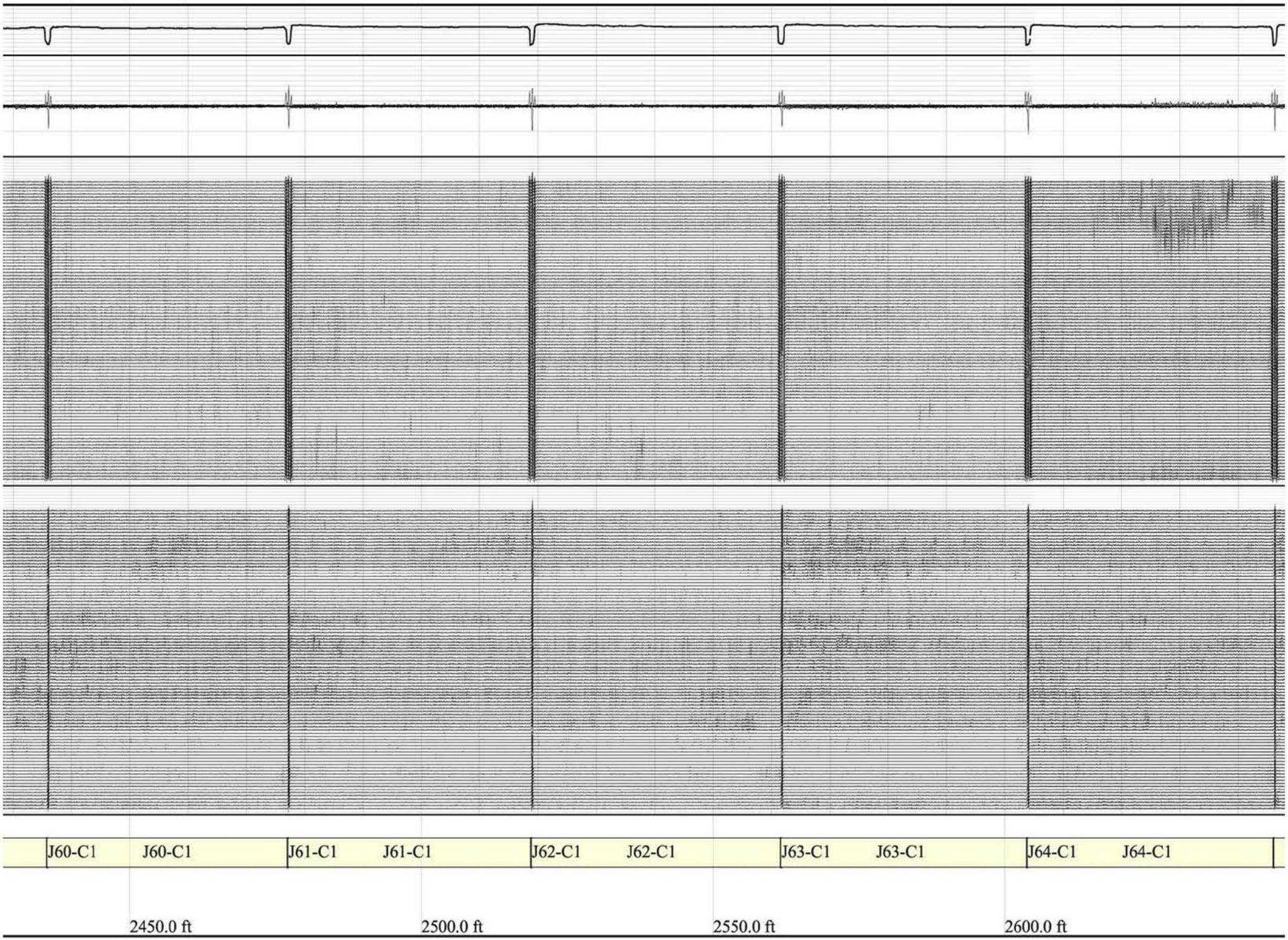
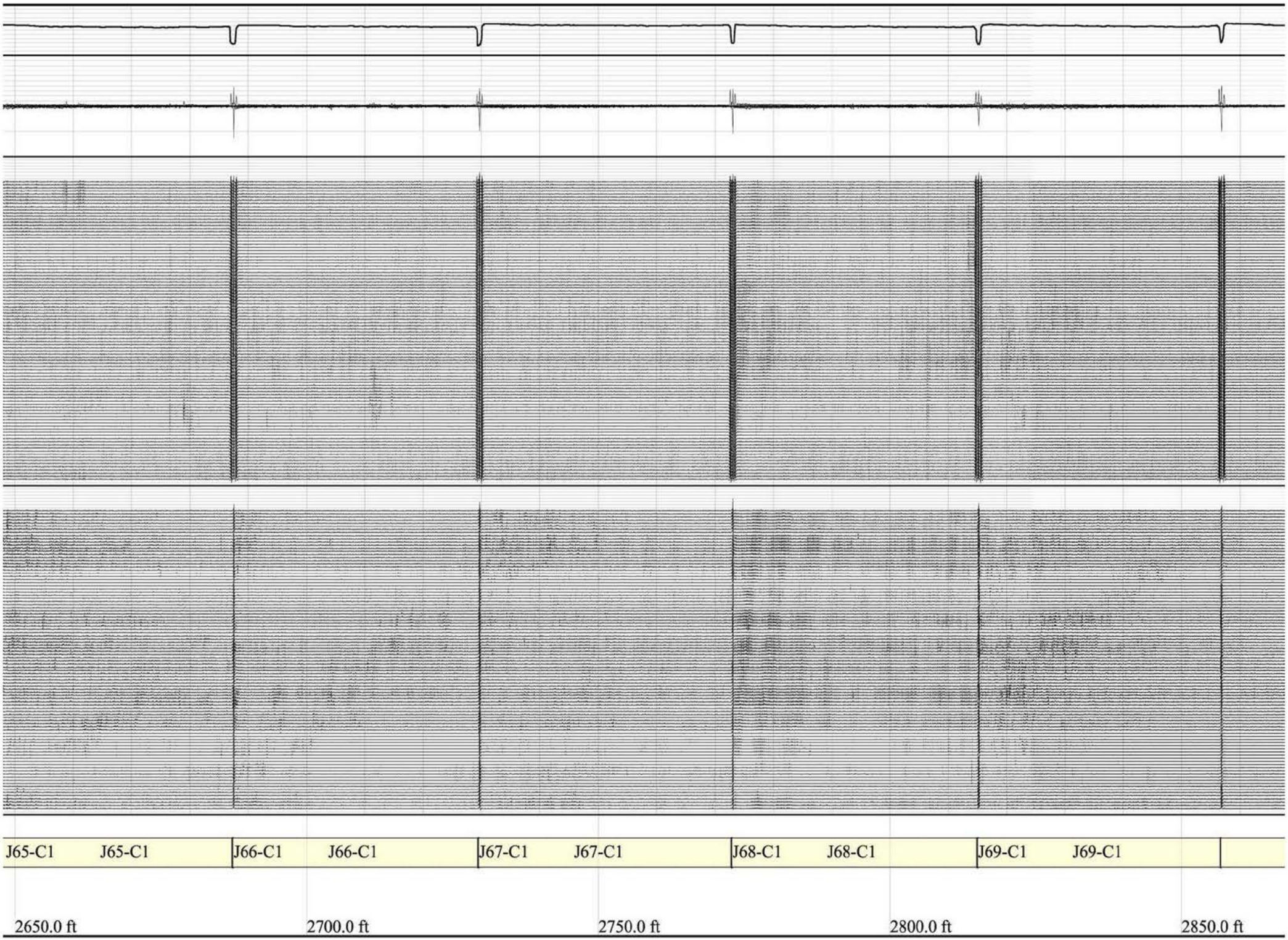


SoCalGas-7.0613



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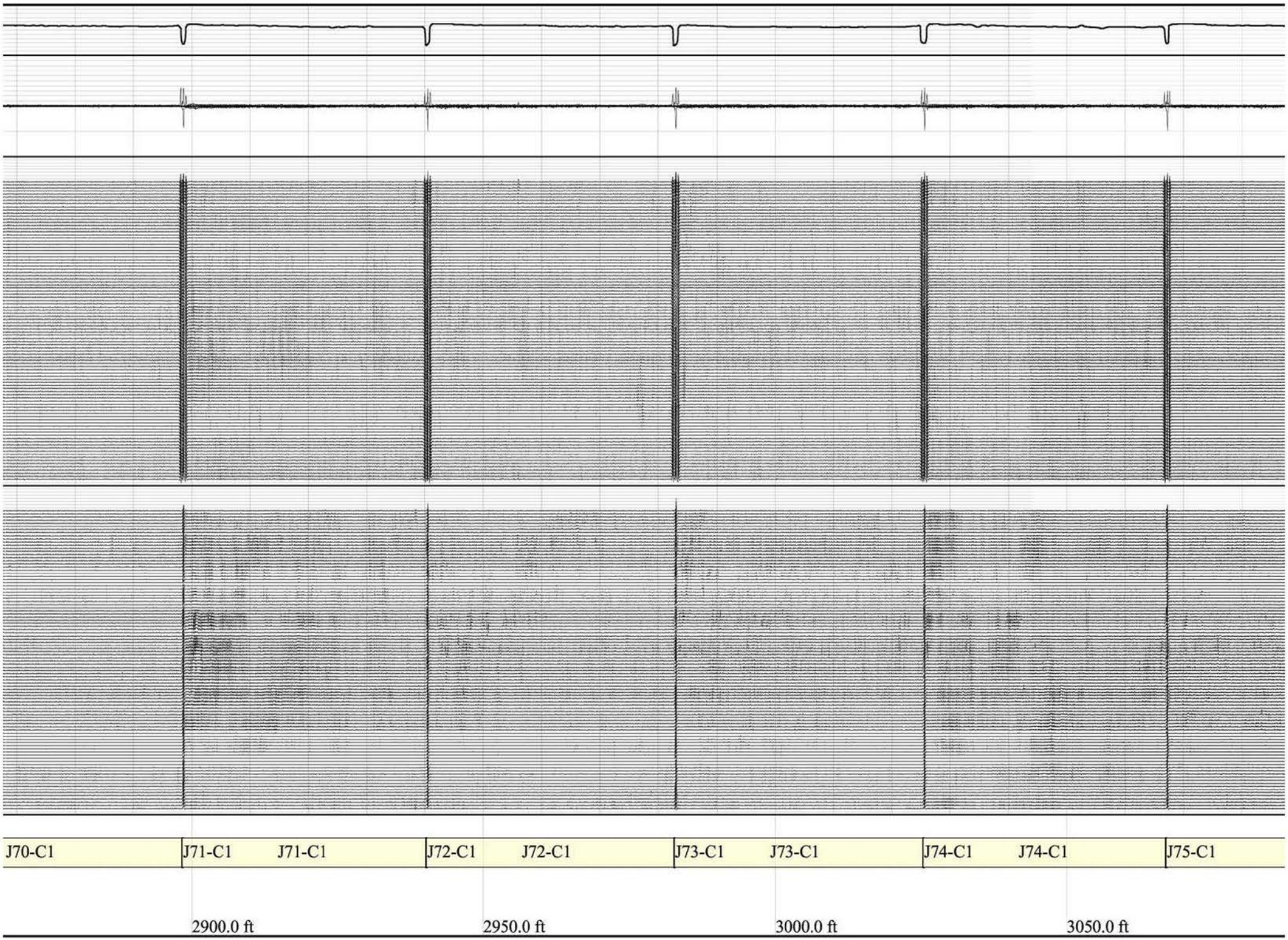

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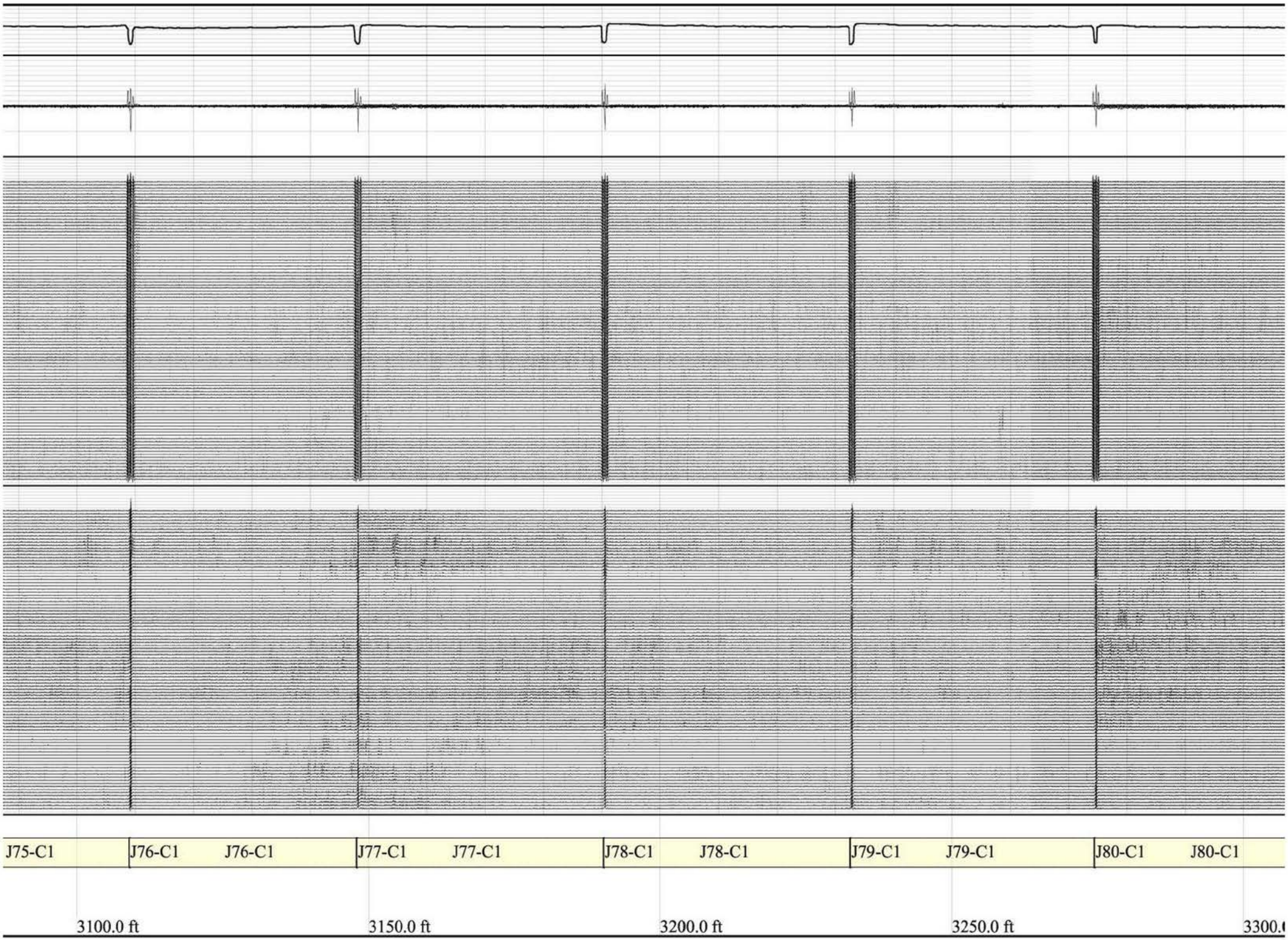

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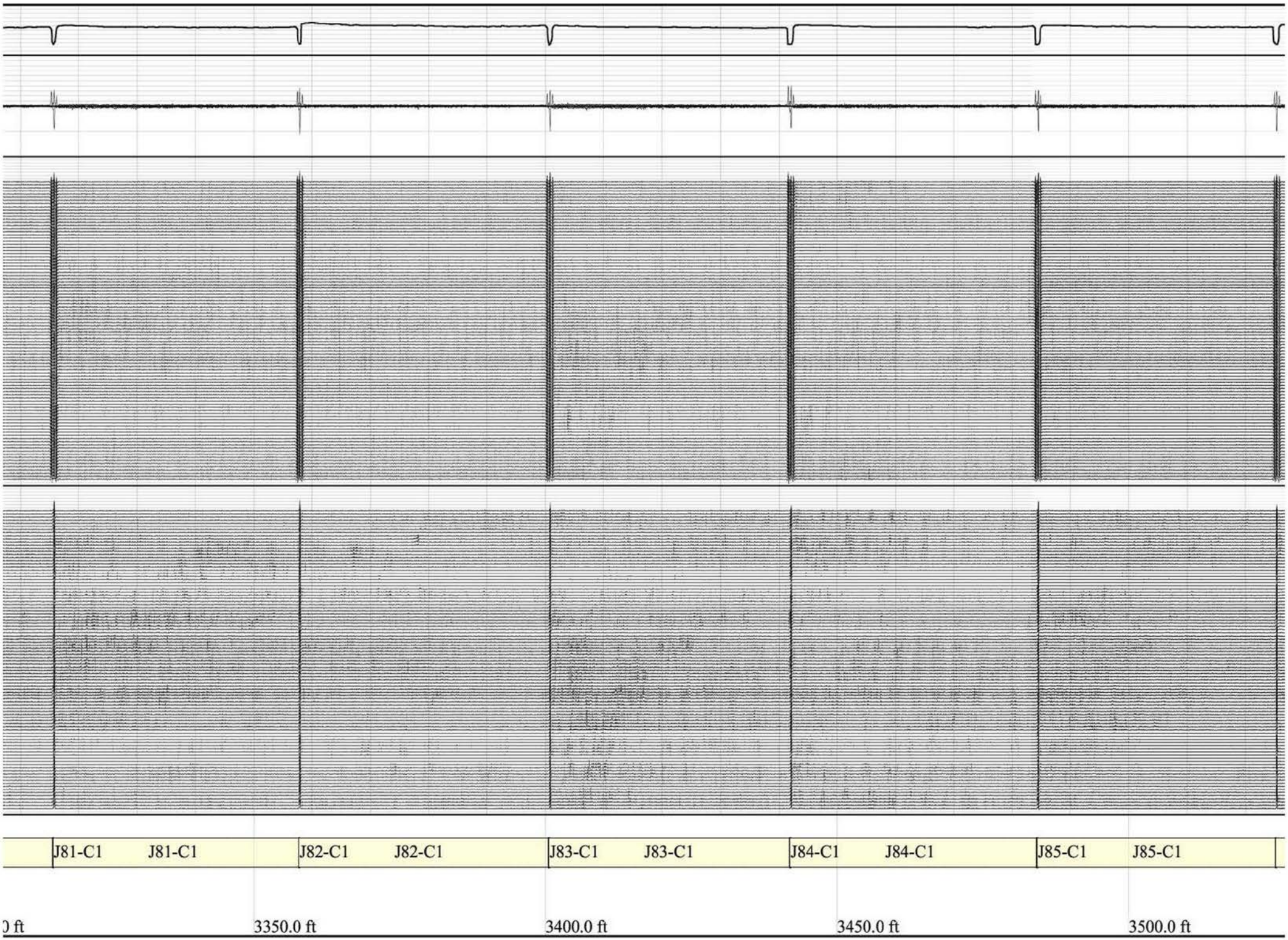

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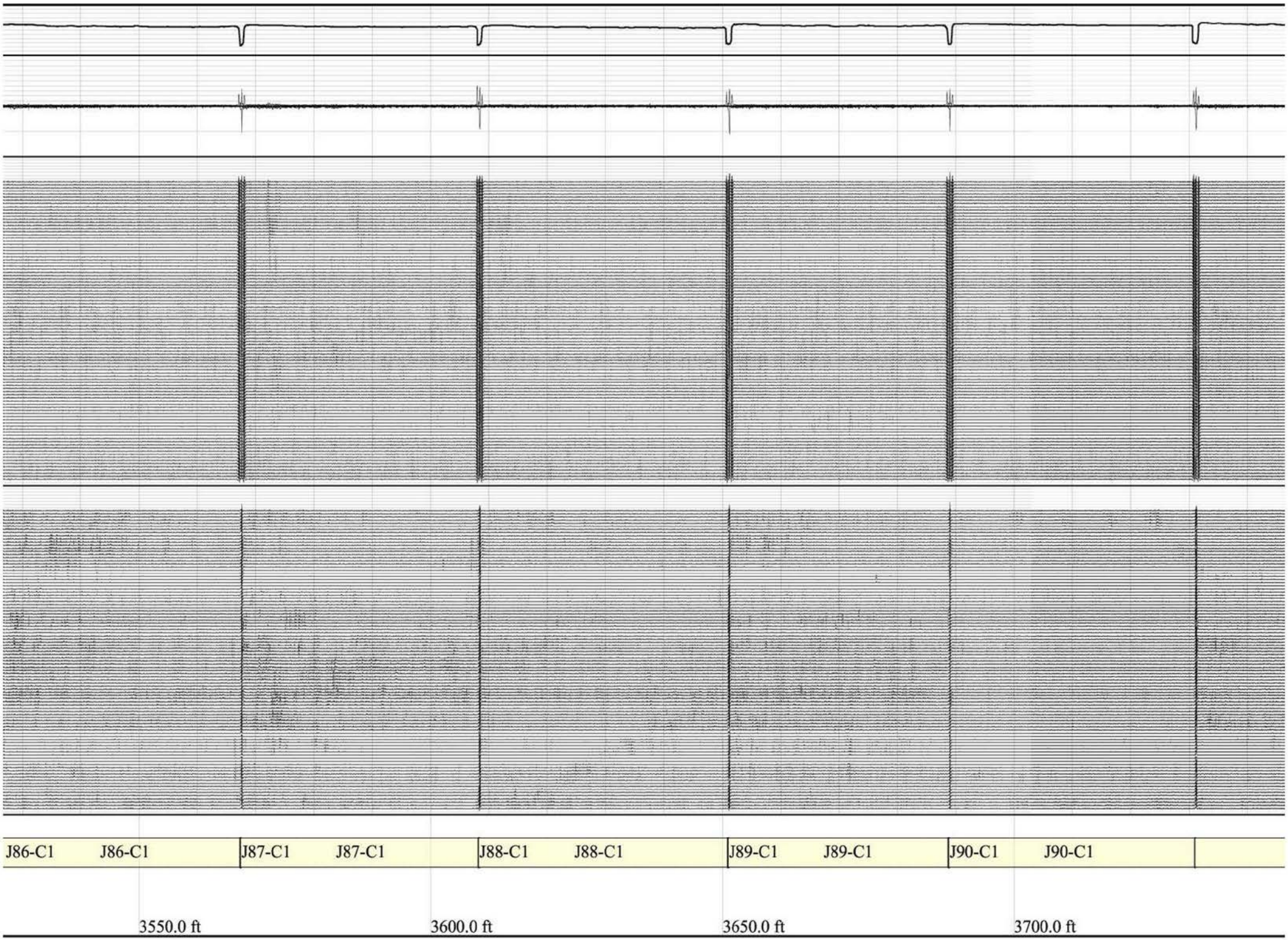

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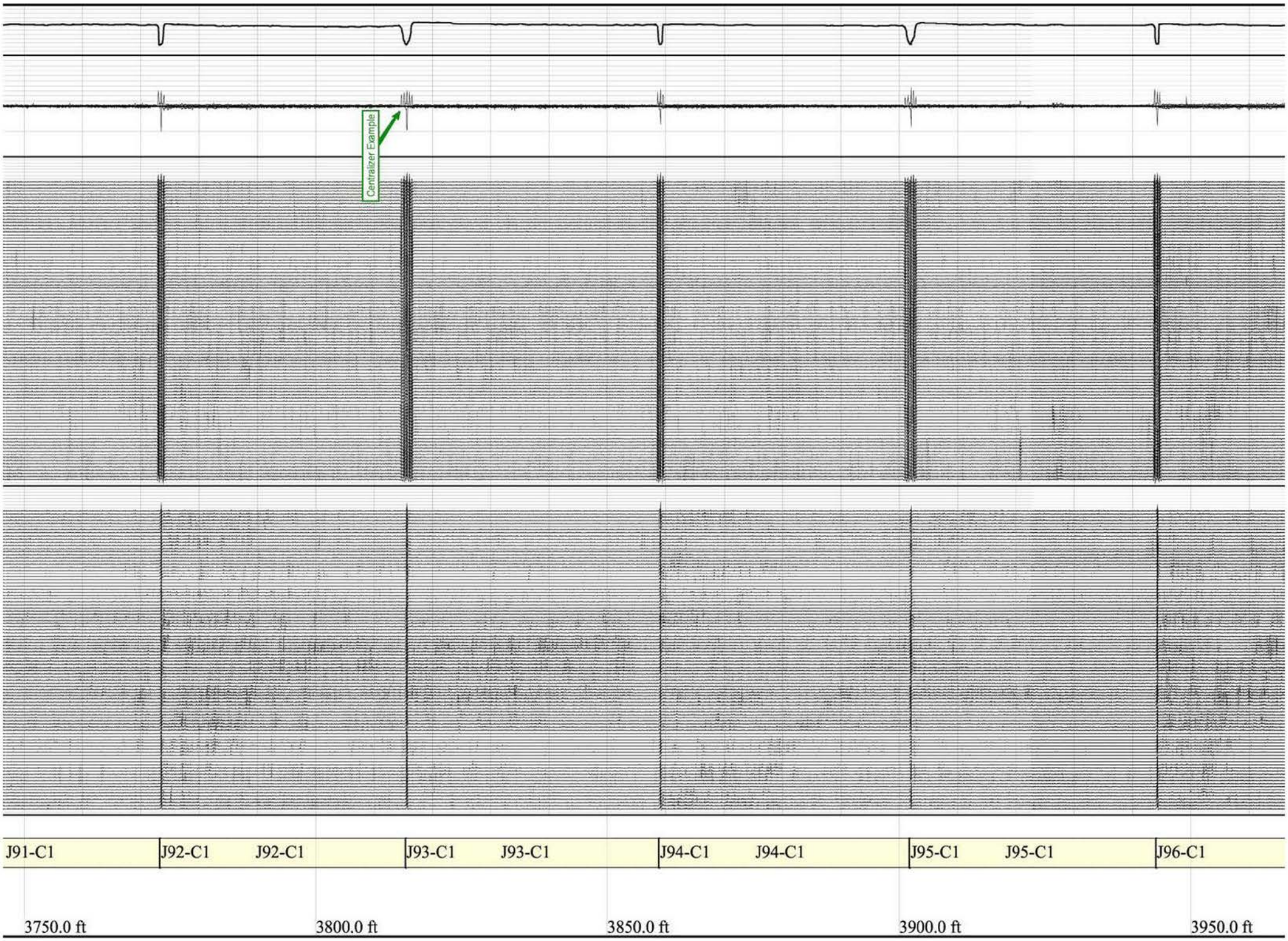

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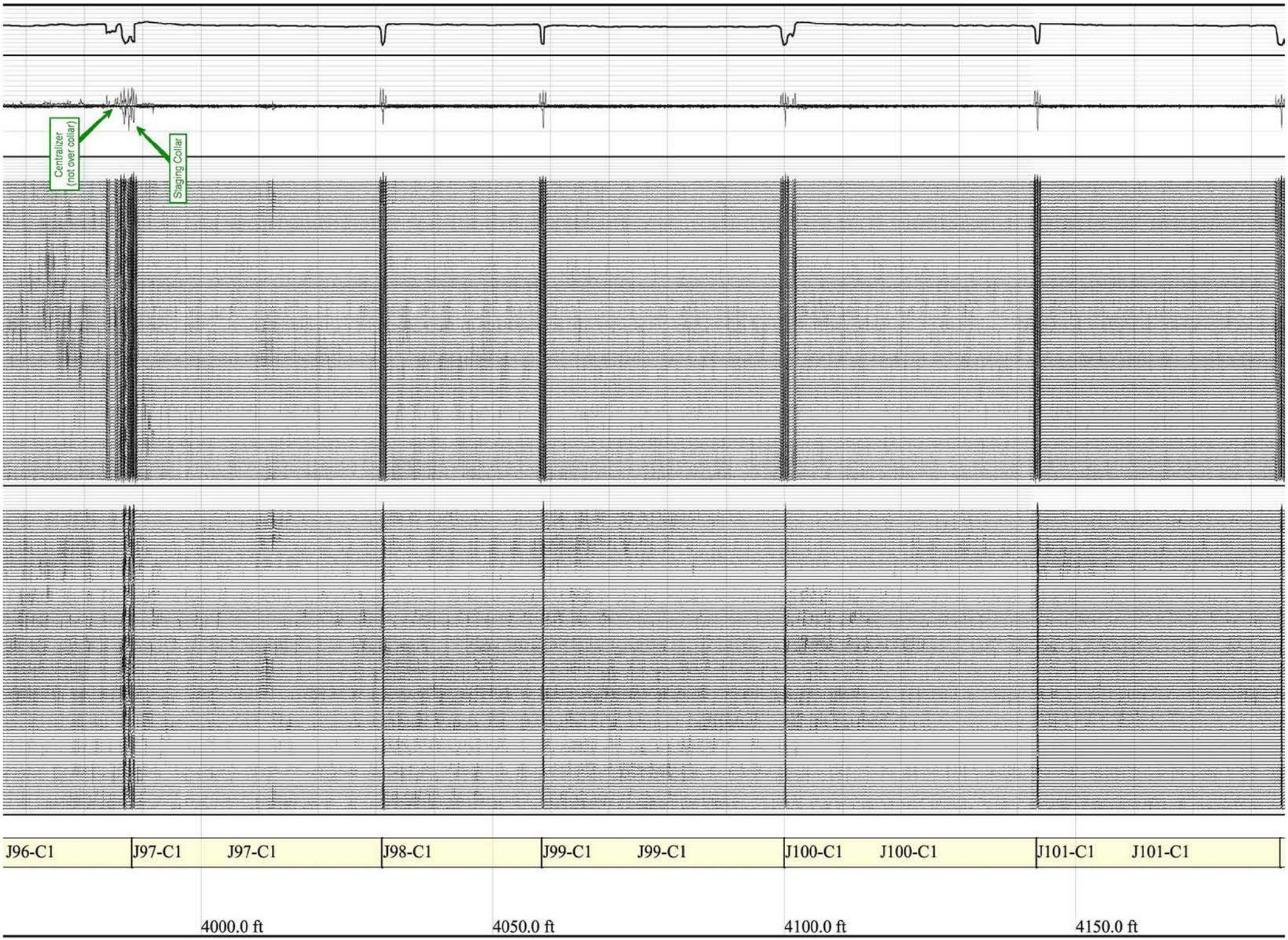

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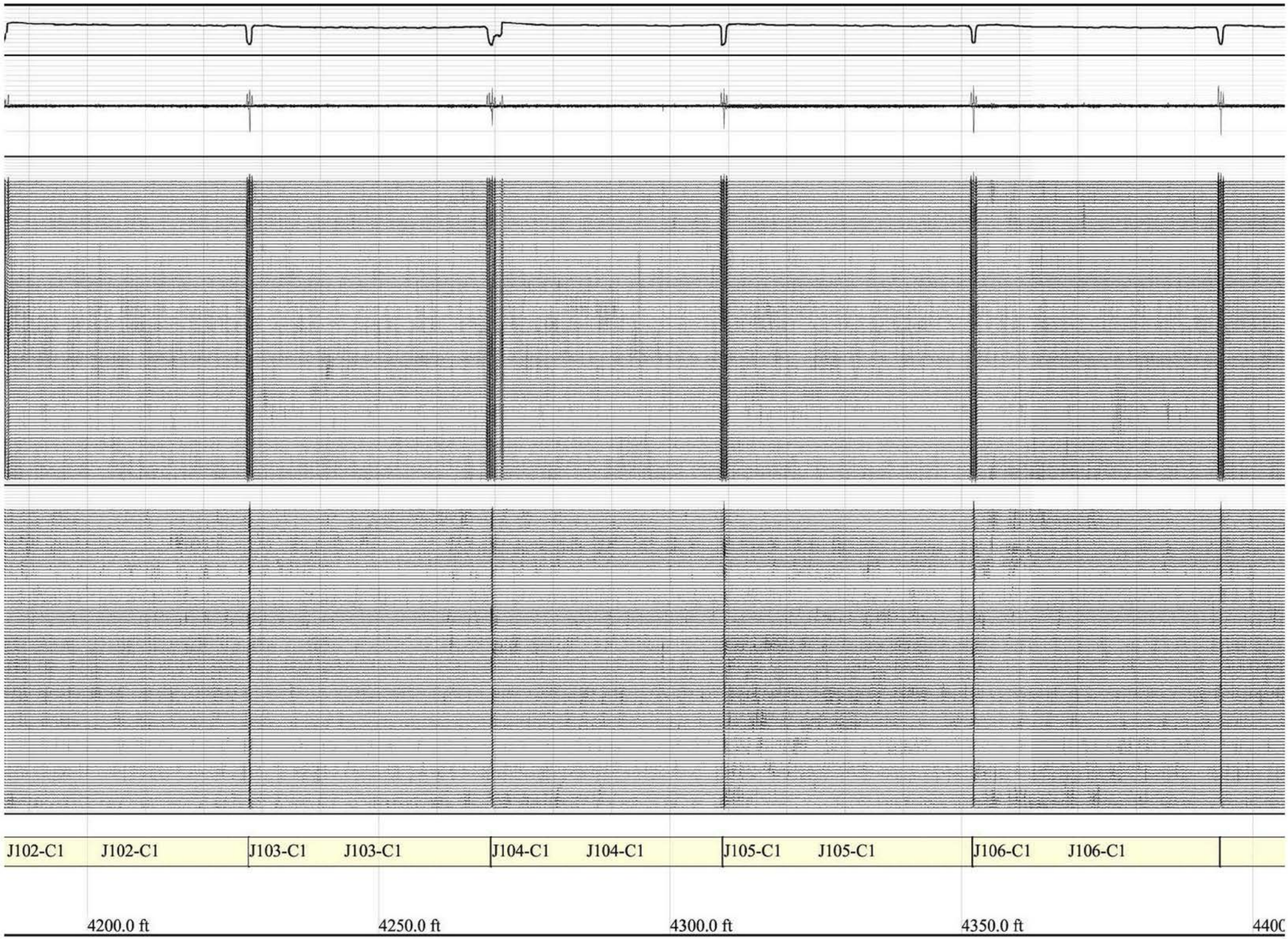

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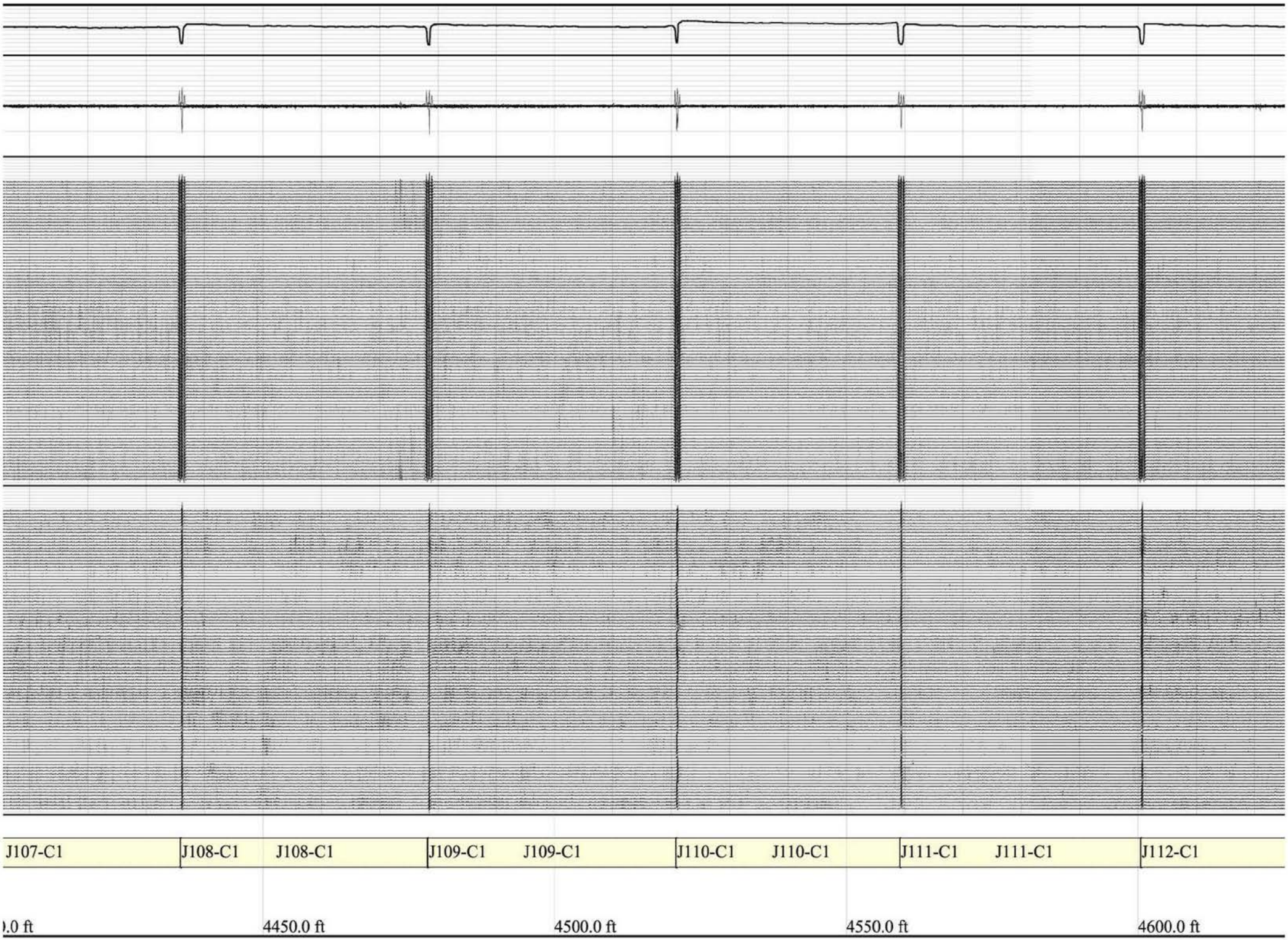

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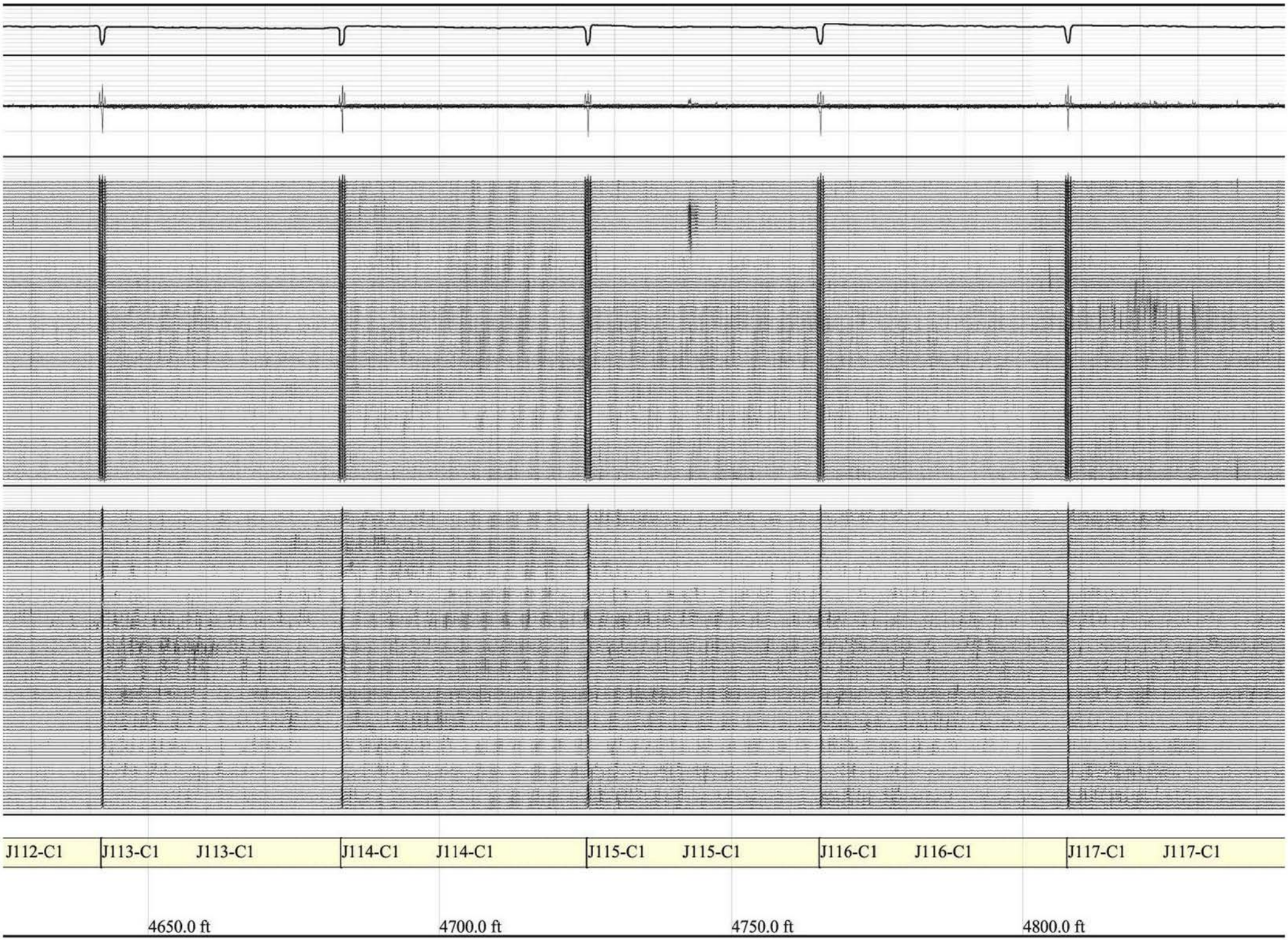

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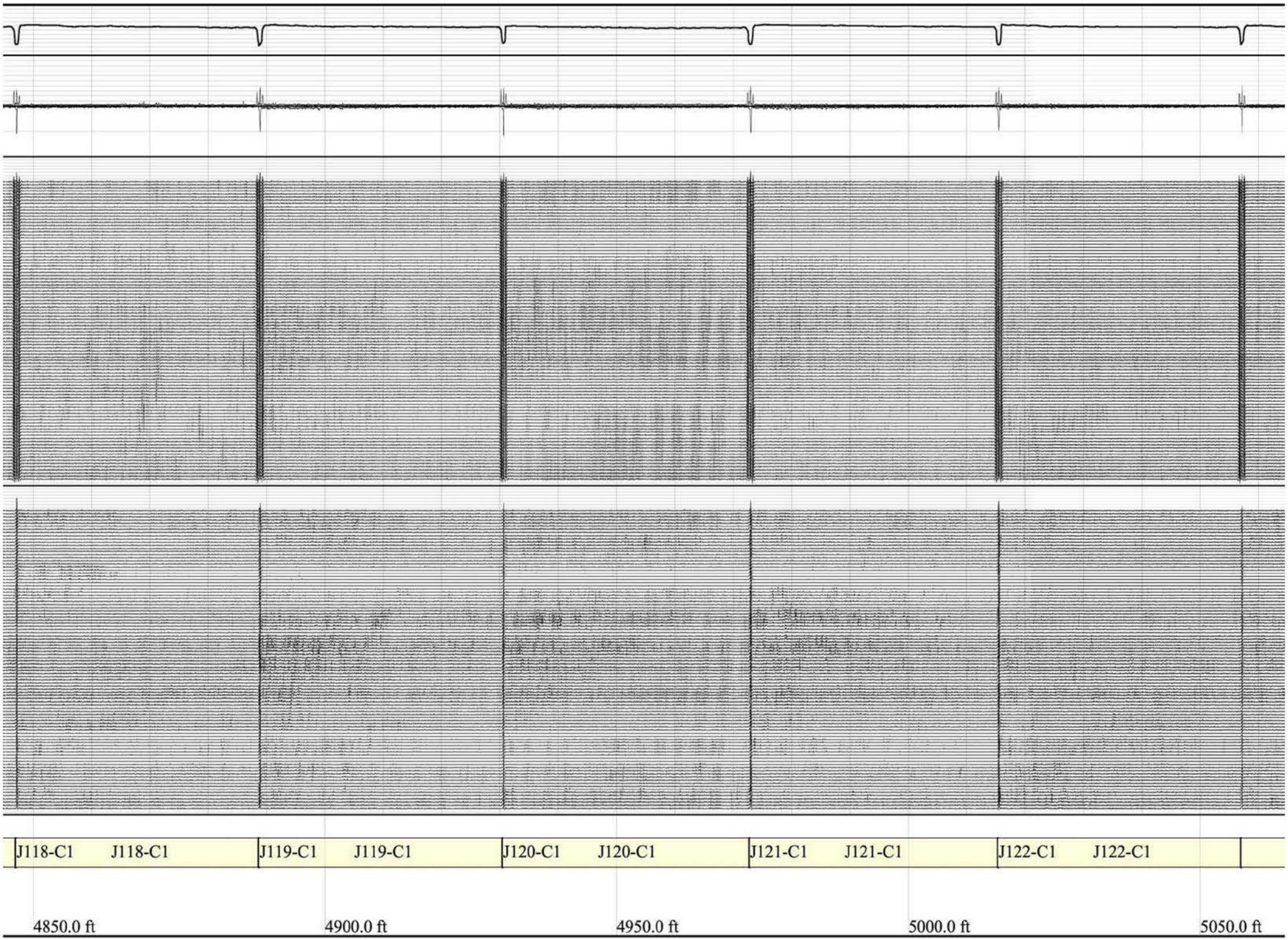

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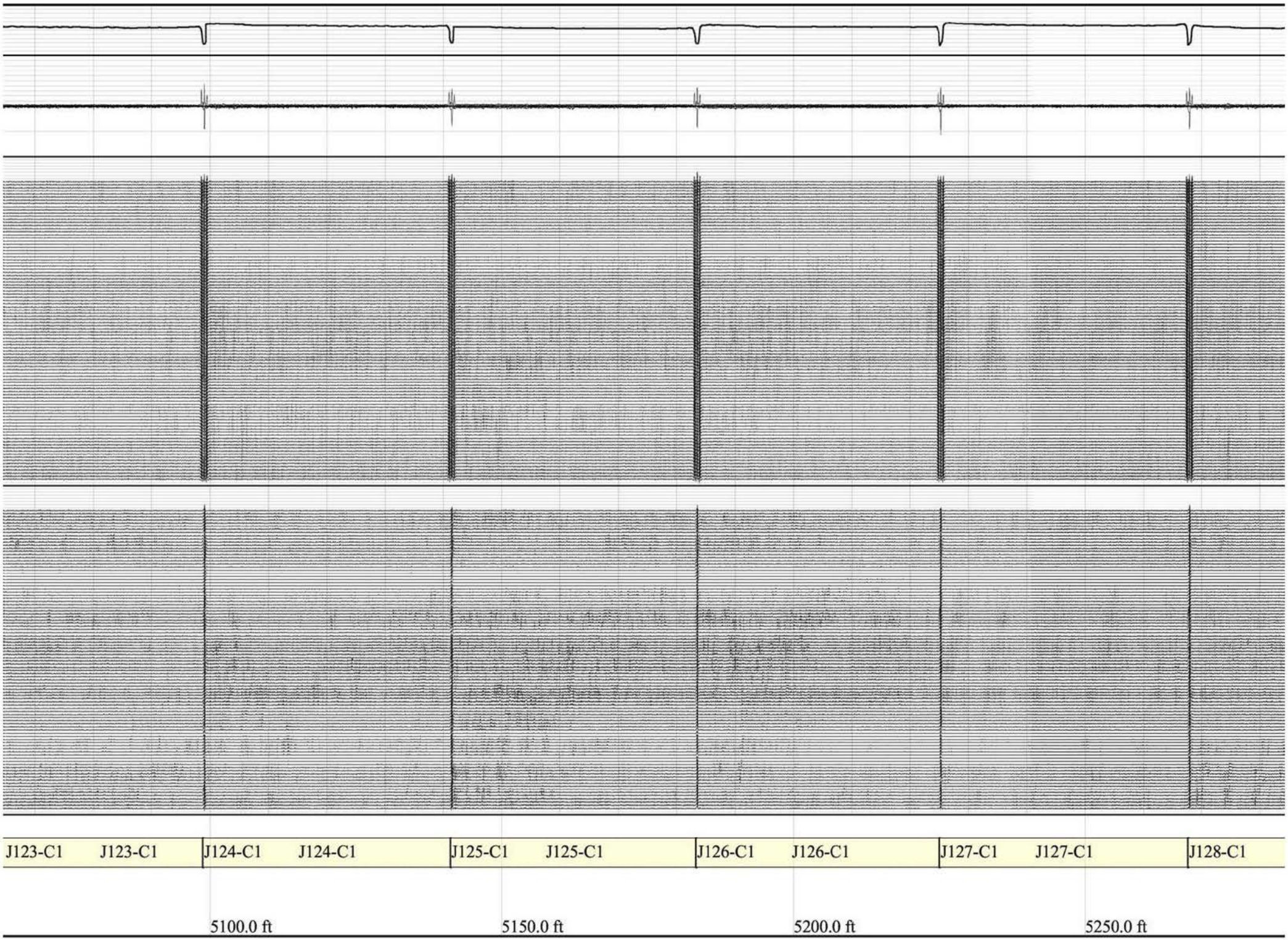

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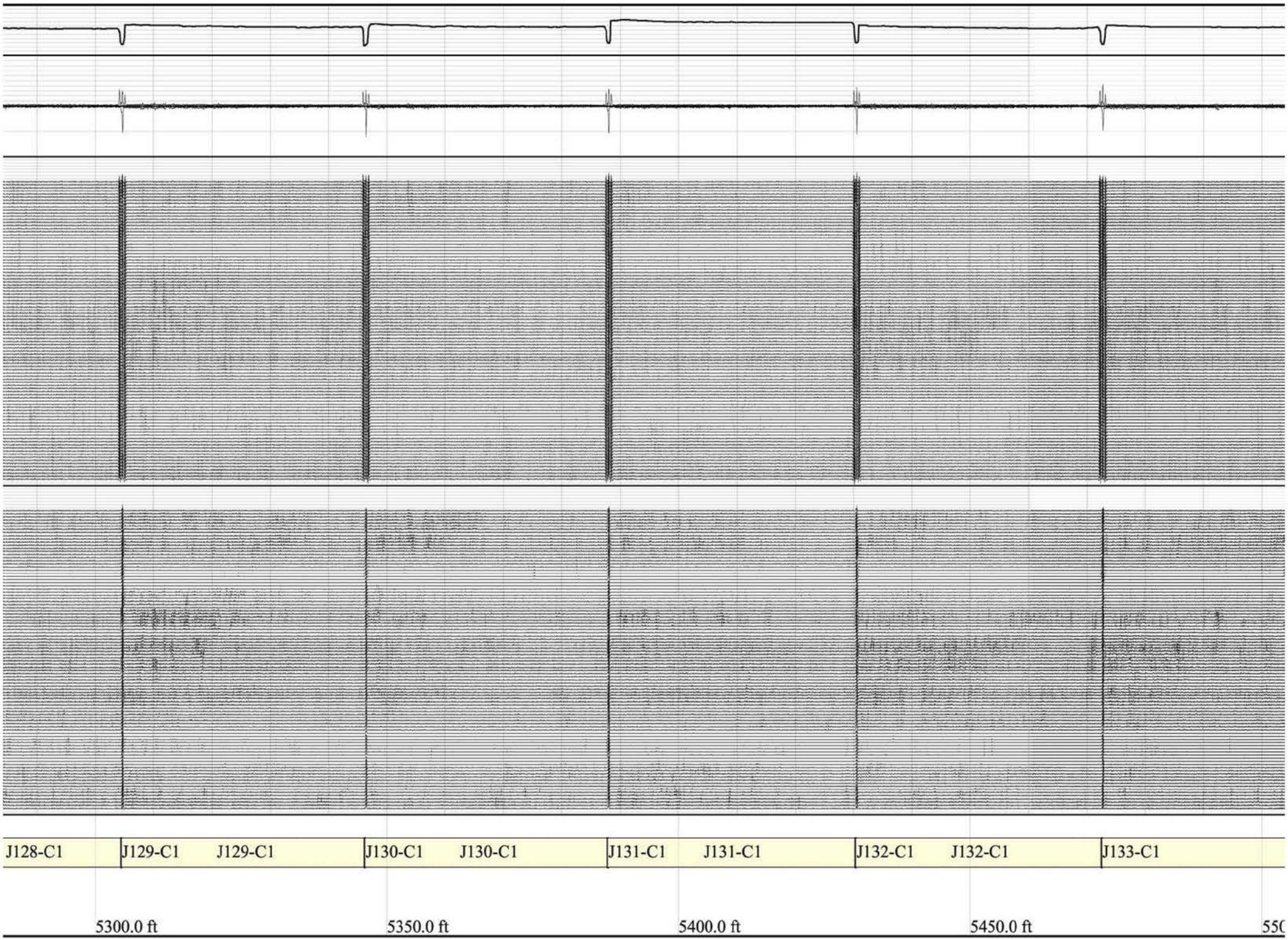

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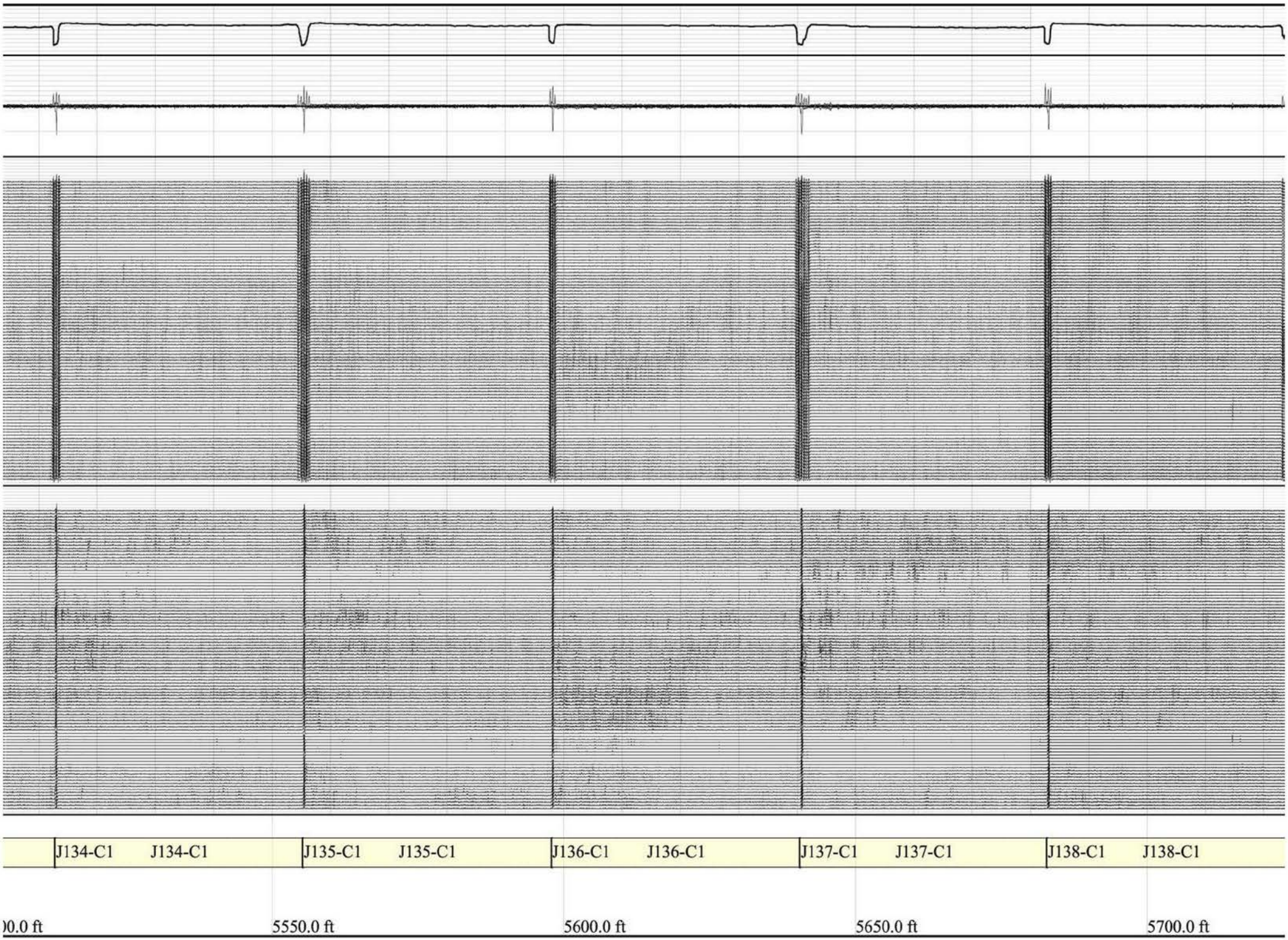

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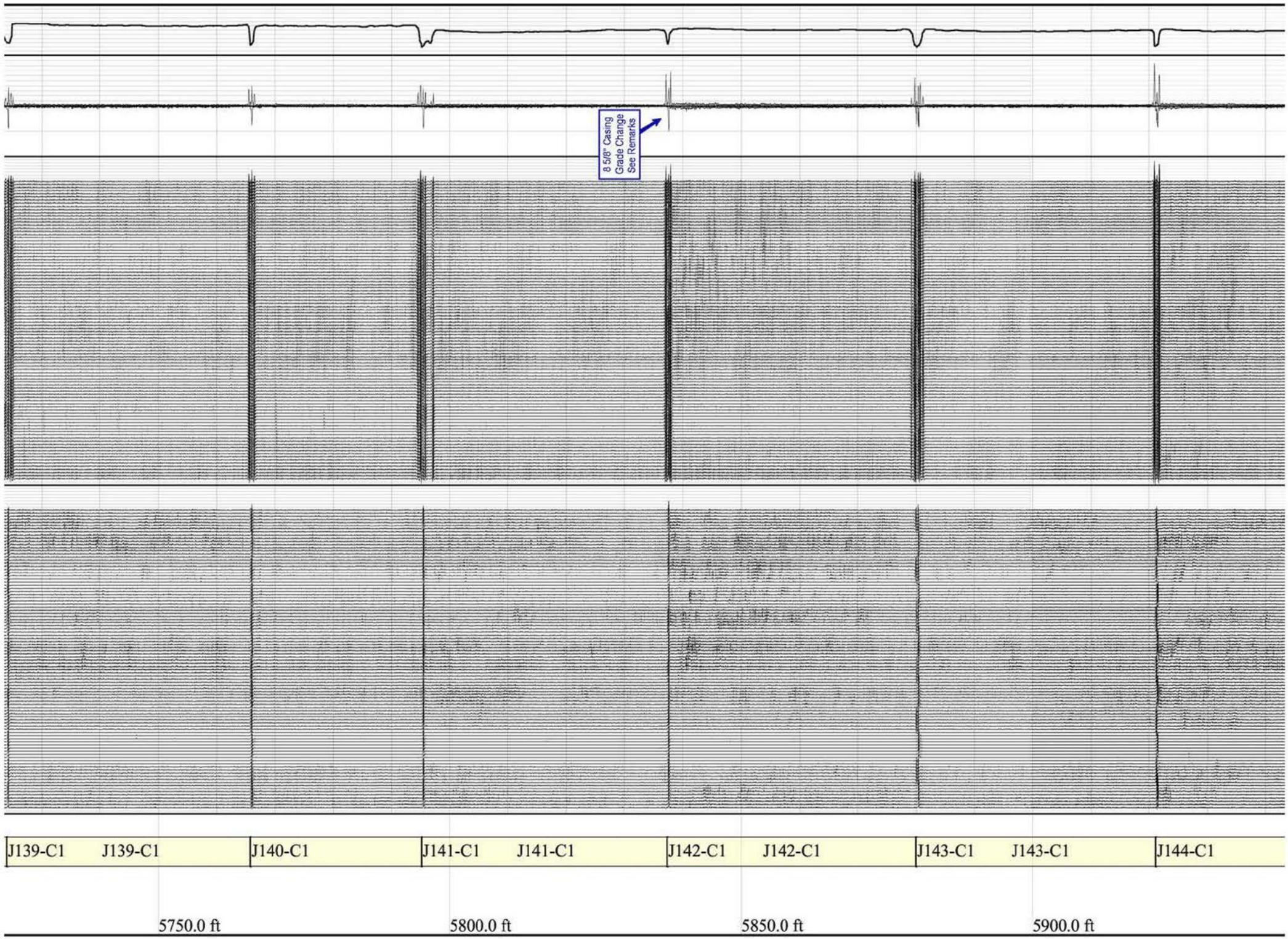

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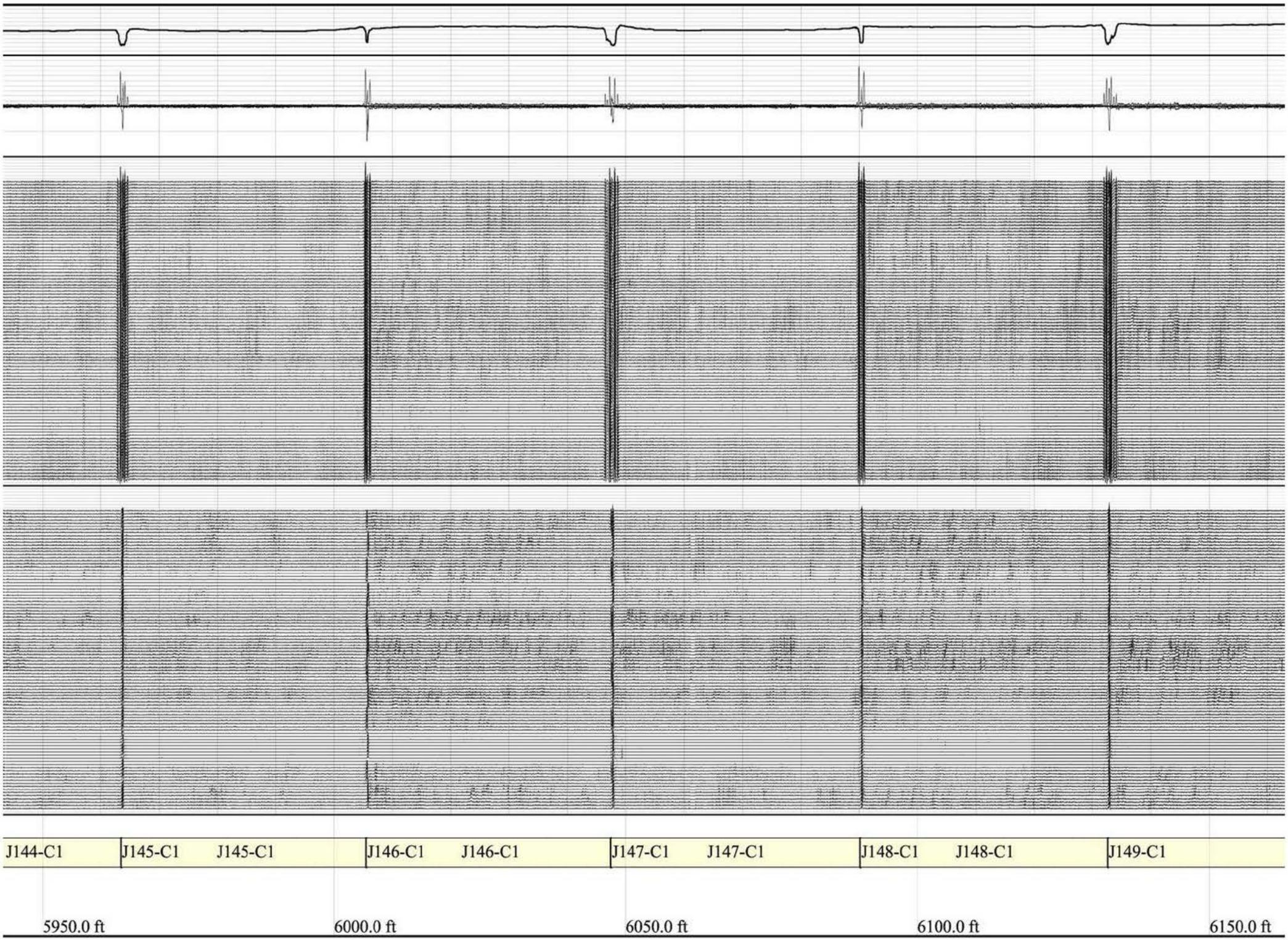

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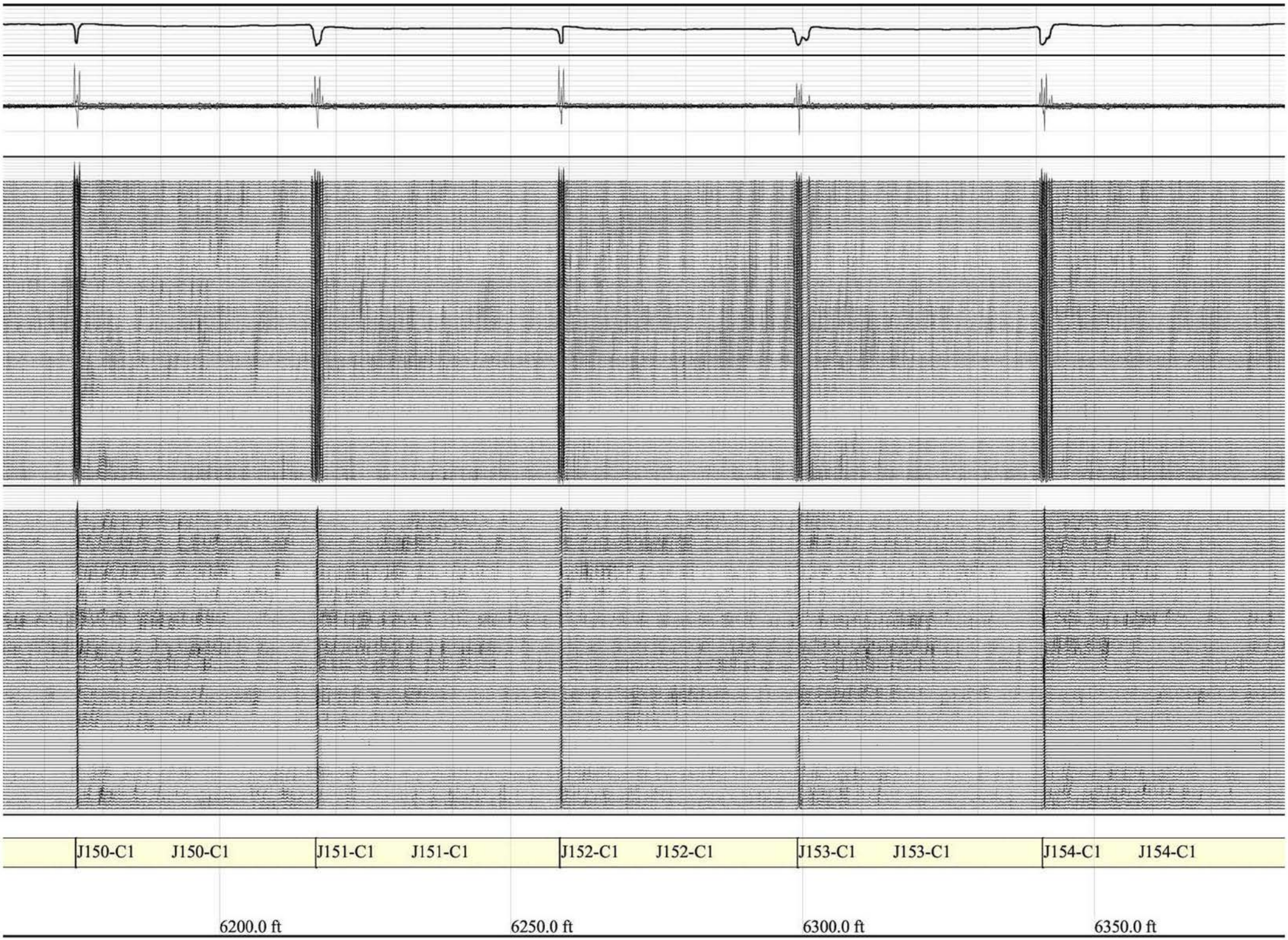

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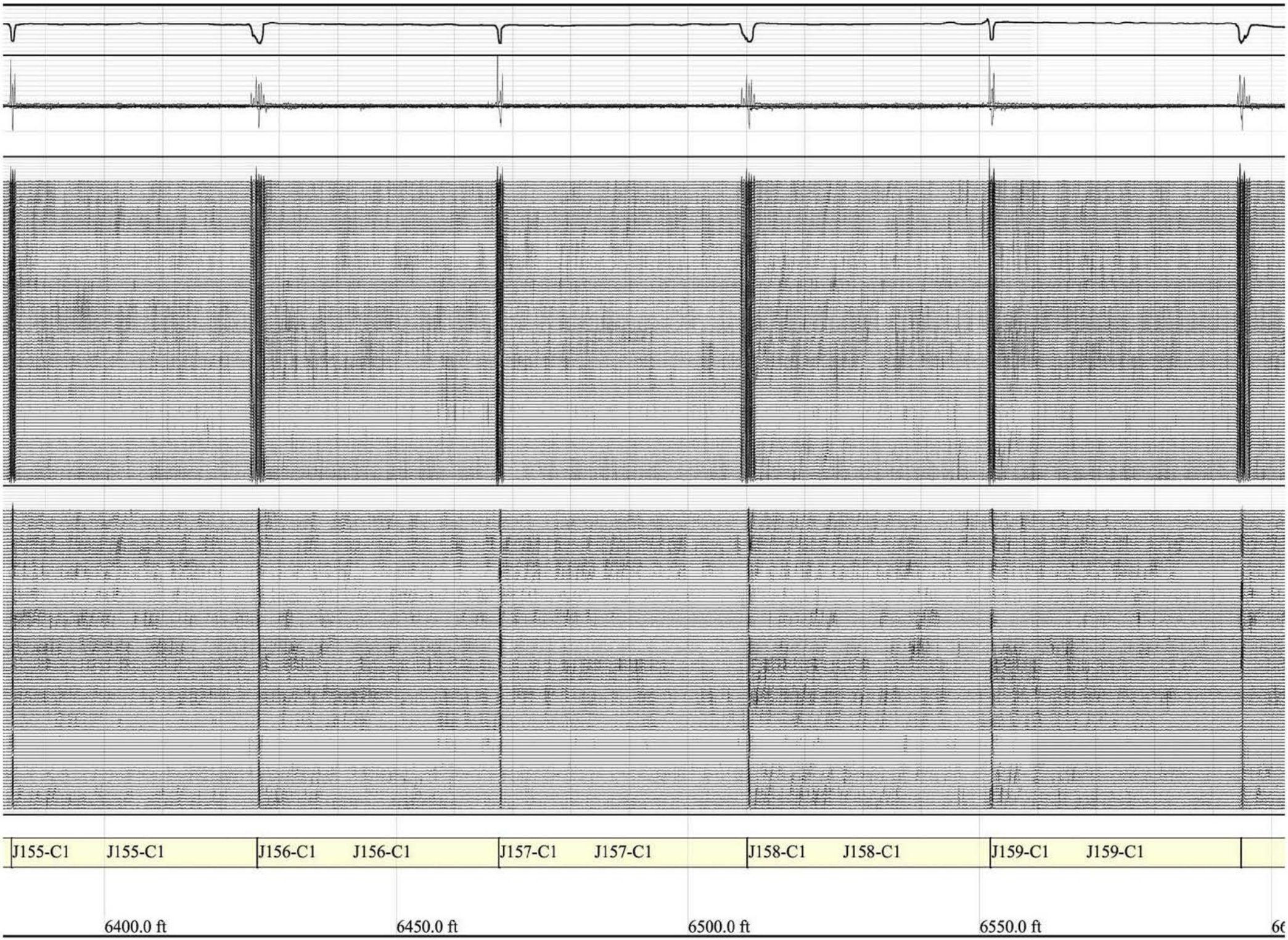

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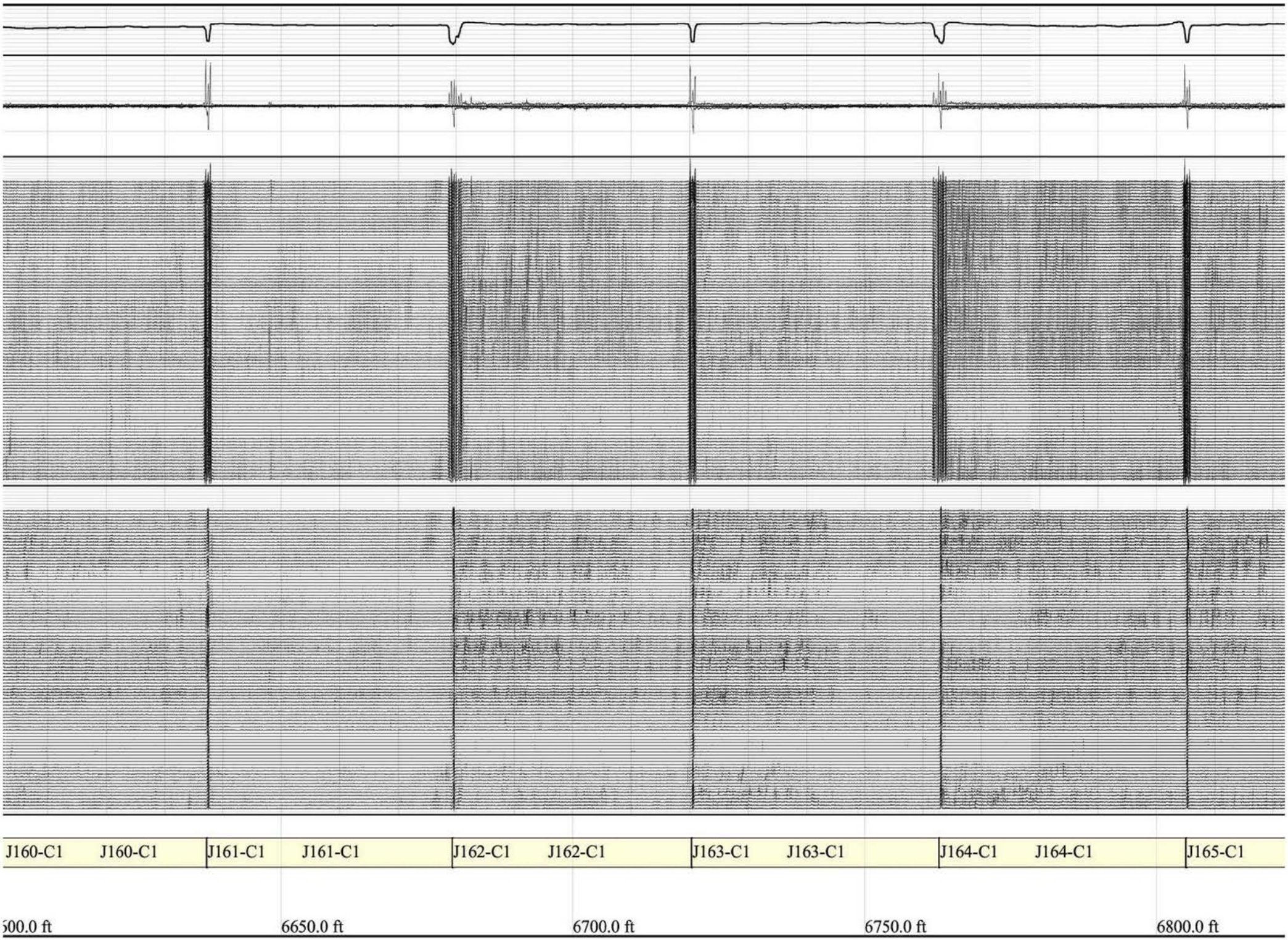

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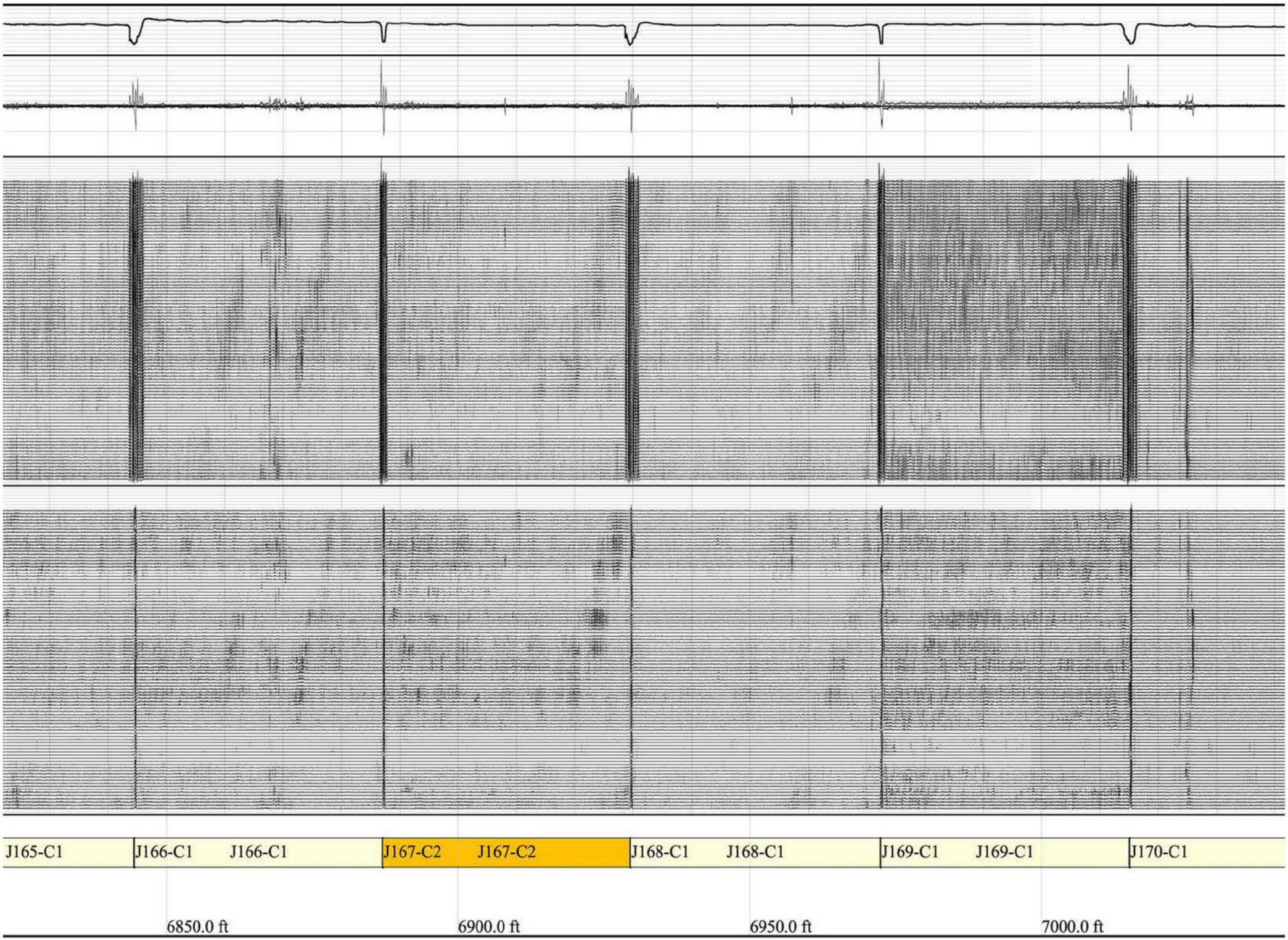


SoCalGas-7.0633

Joint Summary

Southern California Gas Company
Aliso Canyon
Fernando Fee 35B

Identifier	Start Log Depth	Joint Length	Diameter	Wall Thickness	Weight	Max ML Depth	Max ML Position	Min Burst Pressure	Joint Depth Class
	ft	ft	in	in	lb/ft	%	ft	psi	
JT-1	14.61	10.51	8.625	0.400	36.0	0			1
JT-2	25.12	42.16	8.625	0.400	36.0	0			1
JT-3	67.28	42.89	8.625	0.400	36.0	0			1
JT-4	110.17	41.77	8.625	0.400	36.0	0			1
JT-5	151.93	41.64	8.625	0.400	36.0	0			1
JT-6	193.57	41.14	8.625	0.400	36.0	0			1
JT-7	234.71	42.09	8.625	0.400	36.0	0			1
JT-8	276.80	38.49	8.625	0.400	36.0	0			1
JT-9	315.29	40.62	8.625	0.400	36.0	0			1
JT-10	355.91	39.73	8.625	0.400	36.0	0			1
JT-11	395.64	43.21	8.625	0.400	36.0	0			1
JT-12	438.85	41.00	8.625	0.400	36.0	0			1
JT-13	479.85	42.02	8.625	0.400	36.0	0			1
JT-14	521.86	39.07	8.625	0.400	36.0	0			1
JT-15	560.94	41.58	8.625	0.400	36.0	0			1
JT-16	602.52	42.78	8.625	0.400	36.0	0			1
JT-17	645.30	42.77	8.625	0.400	36.0	0			1
JT-18	688.07	40.45	8.625	0.400	36.0	0			1
JT-19	728.53	43.69	8.625	0.400	36.0	0			1
JT-20	772.22	43.33	8.625	0.400	36.0	0			1
JT-21	815.55	41.84	8.625	0.400	36.0	0			1
JT-22	857.39	42.12	8.625	0.400	36.0	0			1
JT-23	899.51	41.25	8.625	0.400	36.0	0			1
JT-24	940.76	41.40	8.625	0.400	36.0	0			1
JT-25	982.16	41.13	8.625	0.400	36.0	0			1
JT-26	1023.29	40.52	8.625	0.400	36.0	0			1
JT-27	1063.82	39.84	8.625	0.400	36.0	0			1
JT-28	1103.66	41.60	8.625	0.400	36.0	0			1
JT-29	1145.25	42.04	8.625	0.400	36.0	0			1
JT-30	1187.29	43.45	8.625	0.400	36.0	0			1
JT-31	1230.74	41.56	8.625	0.400	36.0	0			1
JT-32	1272.31	41.90	8.625	0.400	36.0	0			1
JT-33	1314.21	41.71	8.625	0.400	36.0	0			1
JT-34	1355.91	39.76	8.625	0.400	36.0	0			1
JT-35	1395.67	41.56	8.625	0.400	36.0	0			1
JT-36	1437.23	41.37	8.625	0.400	36.0	0			1
JT-37	1478.61	43.00	8.625	0.400	36.0	0			1
JT-38	1521.61	41.20	8.625	0.400	36.0	0			1
JT-39	1562.81	41.88	8.625	0.400	36.0	0			1
JT-40	1604.69	39.01	8.625	0.400	36.0	0			1
JT-41	1643.71	42.71	8.625	0.400	36.0	0			1
JT-42	1686.42	41.05	8.625	0.400	36.0	0			1
JT-43	1727.46	41.00	8.625	0.400	36.0	0			1
JT-44	1768.46	41.92	8.625	0.400	36.0	0			1
JT-45	1810.38	41.67	8.625	0.400	36.0	0			1
JT-46	1852.05	43.13	8.625	0.400	36.0	0			1
JT-47	1895.18	41.90	8.625	0.400	36.0	0			1
JT-48	1937.08	41.11	8.625	0.400	36.0	0			1
JT-49	1978.19	40.85	8.625	0.400	36.0	0			1
JT-50	2019.05	41.40	8.625	0.400	36.0	0			1
JT-51	2060.44	42.63	8.625	0.400	36.0	0			1
JT-52	2103.07	41.07	8.625	0.400	36.0	0			1
JT-53	2144.14	41.70	8.625	0.400	36.0	17	2158.88	5787	1
JT-54	2185.84	41.39	8.625	0.400	36.0	19	2197.13	5838	1
JT-55	2227.23	42.01	8.625	0.400	36.0	21	2242.62	5788	2
JT-56	2269.24	41.08	8.625	0.400	36.0	0			1
JT-57	2310.32	43.55	8.625	0.400	36.0	15	2318.22	5978	1
JT-58	2353.87	41.05	8.625	0.400	36.0	0			1

JT-59	2394.92	41.00	8.625	0.400	36.0	0			1
JT-60	2435.92	41.18	8.625	0.400	36.0	0			1
JT-61	2477.11	41.82	8.625	0.400	36.0	0			1
JT-62	2518.93	42.68	8.625	0.400	36.0	0			1
JT-63	2561.61	42.28	8.625	0.400	36.0	0			1
JT-64	2603.89	42.29	8.625	0.400	36.0	15	2635.20	5978	1
JT-65	2646.18	41.20	8.625	0.400	36.0	0			1
JT-66	2687.38	42.20	8.625	0.400	36.0	0			1
JT-67	2729.58	43.29	8.625	0.400	36.0	0			1
JT-68	2772.88	42.19	8.625	0.400	36.0	0			1
JT-69	2815.07	41.66	8.625	0.400	36.0	0			1
JT-70	2856.73	41.71	8.625	0.400	36.0	0			1
JT-71	2898.44	41.88	8.625	0.400	36.0	0			1
JT-72	2940.32	42.52	8.625	0.400	36.0	0			1
JT-73	2982.83	42.65	8.625	0.400	36.0	0			1
JT-74	3025.48	41.57	8.625	0.400	36.0	0			1
JT-75	3067.05	42.03	8.625	0.400	36.0	0			1
JT-76	3109.08	38.97	8.625	0.400	36.0	0			1
JT-77	3148.06	42.35	8.625	0.400	36.0	0			1
JT-78	3190.40	42.31	8.625	0.400	36.0	0			1
JT-79	3232.71	41.85	8.625	0.400	36.0	0			1
JT-80	3274.56	41.09	8.625	0.400	36.0	0			1
JT-81	3315.65	42.12	8.625	0.400	36.0	0			1
JT-82	3357.77	42.90	8.625	0.400	36.0	0			1
JT-83	3400.67	41.26	8.625	0.400	36.0	0			1
JT-84	3441.93	42.40	8.625	0.400	36.0	0			1
JT-85	3484.33	40.97	8.625	0.400	36.0	0			1
JT-86	3525.30	42.16	8.625	0.400	36.0	0			1
JT-87	3567.46	40.87	8.625	0.400	36.0	0			1
JT-88	3608.34	42.68	8.625	0.400	36.0	0			1
JT-89	3651.02	37.87	8.625	0.400	36.0	0			1
JT-90	3688.89	42.20	8.625	0.400	36.0	0			1
JT-91	3731.09	42.27	8.625	0.400	36.0	0			1
JT-92	3773.37	42.10	8.625	0.400	36.0	0			1
JT-93	3815.47	43.54	8.625	0.400	36.0	0			1
JT-94	3859.01	42.83	8.625	0.400	36.0	0			1
JT-95	3901.84	42.26	8.625	0.400	36.0	0			1
JT-96	3944.10	44.17	8.625	0.400	36.0	15	3979.22	5989	1
JT-97	3988.27	42.85	8.625	0.400	36.0	0			1
JT-98	4031.12	27.40	8.625	0.400	36.0	0			1
JT-99	4058.52	41.50	8.625	0.400	36.0	0			1
JT-100	4100.02	43.24	8.625	0.400	36.0	0			1
JT-101	4143.26	41.88	8.625	0.400	36.0	0			1
JT-102	4185.14	42.59	8.625	0.400	36.0	0			1
JT-103	4227.73	41.66	8.625	0.400	36.0	0			1
JT-104	4269.40	39.68	8.625	0.400	36.0	0			1
JT-105	4309.08	42.90	8.625	0.400	36.0	0			1
JT-106	4351.98	42.40	8.625	0.400	36.0	0			1
JT-107	4394.38	41.61	8.625	0.400	36.0	0			1
JT-108	4435.99	42.40	8.625	0.400	36.0	0			1
JT-109	4478.39	42.52	8.625	0.400	36.0	0			1
JT-110	4520.91	38.35	8.625	0.400	36.0	0			1
JT-111	4559.26	41.28	8.625	0.400	36.0	0			1
JT-112	4600.54	41.50	8.625	0.400	36.0	0			1
JT-113	4642.04	41.07	8.625	0.400	36.0	0			1
JT-114	4683.11	42.22	8.625	0.400	36.0	0			1
JT-115	4725.33	39.77	8.625	0.400	36.0	0			1
JT-116	4765.11	42.50	8.625	0.400	36.0	0			1
JT-117	4807.61	39.40	8.625	0.400	36.0	0			1
JT-118	4847.01	41.71	8.625	0.400	36.0	0			1
JT-119	4888.72	41.81	8.625	0.400	36.0	0			1
JT-120	4930.53	42.23	8.625	0.400	36.0	0			1
JT-121	4972.76	42.64	8.625	0.400	36.0	0			1
JT-122	5015.40	41.66	8.625	0.400	36.0	0			1
JT-123	5057.06	41.83	8.625	0.400	36.0	0			1
JT-124	5098.89	42.42	8.625	0.400	36.0	0			1
JT-125	5141.31	42.03	8.625	0.400	36.0	0			1
JT-126	5183.34	41.80	8.625	0.400	36.0	0			1
JT-127	5225.15	42.57	8.625	0.400	36.0	0			1
JT-128	5267.72	36.81	8.625	0.400	36.0	0			1
JT-129	5304.53	41.72	8.625	0.400	36.0	0			1
JT-130	5346.26	41.68	8.625	0.400	36.0	0			1
JT-131	5387.93	42.44	8.625	0.400	36.0	0			1
JT-132	5430.38	42.20	8.625	0.400	36.0	0			1
JT-133	5472.58	40.30	8.625	0.400	36.0	0			1
JT-134	5512.88	42.43	8.625	0.400	36.0	0			1
JT-135	5555.31	42.69	8.625	0.400	36.0	0			1
JT-136	5598.00	42.52	8.625	0.400	36.0	0			1
JT-137	5640.52	42.39	8.625	0.400	36.0	0			1
JT-138	5682.91	41.15	8.625	0.400	36.0	0			1
JT-139	5724.06	41.85	8.625	0.400	36.0	0			1
JT-140	5765.91	29.37	8.625	0.400	36.0	0			1
JT-141	5795.27	42.16	8.625	0.400	36.0	0			1
JT-142	5837.43	42.69	8.625	0.400	36.0	0			1
JT-143	5880.12	41.11	8.625	0.400	36.0	0			1

JT-143	5880.12	41.11	8.625	0.400	36.0	0			1
JT-144	5921.23	42.39	8.625	0.400	36.0	0			1
JT-145	5963.62	41.97	8.625	0.400	36.0	0			1
JT-146	6005.59	41.98	8.625	0.400	36.0	0			1
JT-147	6047.57	42.67	8.625	0.400	36.0	0			1
JT-148	6090.23	42.45	8.625	0.400	36.0	0			1
JT-149	6132.68	42.84	8.625	0.400	36.0	0			1
JT-150	6175.52	41.13	8.625	0.400	36.0	0			1
JT-151	6216.65	41.91	8.625	0.400	36.0	0			1
JT-152	6258.56	40.63	8.625	0.400	36.0	0			1
JT-153	6299.19	42.08	8.625	0.400	36.0	0			1
JT-154	6341.27	42.84	8.625	0.400	36.0	0			1
JT-155	6384.11	42.18	8.625	0.400	36.0	0			1
JT-156	6426.29	41.48	8.625	0.400	36.0	0			1
JT-157	6467.76	42.48	8.625	0.400	36.0	0			1
JT-158	6510.25	41.75	8.625	0.400	36.0	0			1
JT-159	6552.00	42.93	8.625	0.400	36.0	0			1
JT-160	6594.93	42.36	8.625	0.400	36.0	0			1
JT-161	6637.29	42.11	8.625	0.400	36.0	0			1
JT-162	6679.41	40.95	8.625	0.400	36.0	0			1
JT-163	6720.36	42.55	8.625	0.400	36.0	0			1
JT-164	6762.91	42.24	8.625	0.400	36.0	0			1
JT-165	6805.15	39.41	8.625	0.400	36.0	0			1
JT-166	6844.56	42.59	8.625	0.400	36.0	17	6867.50	8283	1
JT-167	6887.15	42.46	8.625	0.400	36.0	26	6907.94	8290	2
JT-168	6929.61	42.84	8.625	0.400	36.0	18	6969.86	8228	1
JT-169	6972.45	42.72	8.625	0.400	36.0	0			1
JT-170	7015.17	34.73	8.625	0.400	36.0	18	7025.67	8132	1

Inspection Date: 07-14-2016
Report Date: 07-18-2016

Southern California Gas Company
Aliso Canyon
Fernando Fee 35B

Log Depth	Dist UHC	Joint Length	Identifier	Class	Description	Surface Indication	Length	Width	Depth	Dim Class	P Safe Barlow	ERF Barlow	P Safe Mod B31G	ERF Mod B31G	P Safe Effective Area	ERF Effective Area	NWT	Comment	115% MAOP	Delta MAOP (Barlow)
ft	ft	ft					in	in	%		psi		psi		psi		in		psi	psi
14.61		10.51		Begin External Casing													0.400		3625	
14.61		10.51	C-1	Appurtenance	Flange												0.400		3625	
15.54	0.94	10.51	H-1-1	Hardware	Other												0.400	External Casing Head Response.	3625	
25.12	10.51	42.16	C-2	Collar													0.400		3625	
67.28	42.16	42.89	C-3	Collar													0.400		3625	
110.17	42.89	41.77	C-4	Collar													0.400		3625	
146.88	36.71	41.77	MO-4-1	Metal Object	External Casing Collar												0.400		3625	
151.93	41.77	41.64	C-5	Collar													0.400		3625	
193.57	41.64	41.64	C-6	Collar													0.400		3625	
234.71	41.14	42.09	C-7	Collar													0.400		3625	
276.80	42.09	38.49	C-8	Collar													0.400		3625	
315.29	38.49	40.62	C-9	Collar													0.400		3625	
355.91	40.62	39.73	C-10	Collar													0.400		3625	
395.64	39.73	43.21	C-11	Collar													0.400		3625	
438.85	43.21	41.00	C-12	Collar													0.400		3625	
479.85	41.00	42.02	C-13	Collar													0.400		3625	
521.86	42.02	39.07	C-14	Collar													0.400		3625	
560.94	39.07	41.58	C-15	Collar													0.400		3625	
602.52	41.58	42.78	C-16	Collar													0.400		3625	
645.30	42.78	42.77	C-17	Collar													0.400		3625	
688.07	42.77	40.45	C-18	Collar													0.400		3625	
728.53	40.45	43.69	C-19	Collar													0.400		3625	
772.22	43.69	43.33	C-20	Collar													0.400		3625	
815.55	43.33	41.84	C-21	Collar													0.400		3625	
829.00	13.45	41.84		End External Casing													0.400		3625	
829.00	13.45	41.84	H-21-1	Hardware	Bottom Of External Casing												0.400	Bottom of 13 3/8 External Casing.	3625	
857.39	41.84	42.12	C-22	Collar													0.400		3625	
899.51	42.12	41.25	C-23	Collar													0.400		3625	
940.76	41.25	41.40	C-24	Collar													0.400		3625	
982.16	41.40	41.13	C-25	Collar													0.400		3625	
1023.29	41.13	40.52	C-26	Collar													0.400		3625	
1063.82	40.52	39.84	C-27	Collar													0.400		3625	
1103.66	39.84	41.60	C-28	Collar													0.400		3625	
1145.25	41.60	42.04	C-29	Collar													0.400		3625	
1187.29	42.04	43.45	C-30	Collar													0.400		3625	
1230.74	43.45	41.56	C-31	Collar													0.400		3625	
1272.31	41.56	41.90	C-32	Collar													0.400		3625	
1314.21	41.90	41.71	C-33	Collar													0.400		3625	
1355.91	41.71	39.76	C-34	Collar													0.400		3625	
1395.67	39.76	41.56	C-35	Collar													0.400		3625	
1437.23	41.56	41.37	C-36	Collar													0.400		3625	
1478.61	41.37	43.00	C-37	Collar													0.400		3625	
1521.61	43.00	41.20	C-38	Collar													0.400		3625	
1562.81	41.20	41.88	C-39	Collar													0.400		3625	
1604.69	41.88	39.01	C-40	Collar													0.400		3625	
1643.71	39.01	42.71	C-41	Collar													0.400		3625	
1686.42	42.71	41.05	C-42	Collar													0.400		3625	
1727.46	41.05	41.00	C-43	Collar													0.400		3625	
1768.46	41.00	41.92	C-44	Collar													0.400		3625	
1810.38	41.92	41.67	C-45	Collar													0.400		3625	
1852.05	41.67	43.13	C-46	Collar													0.400		3625	
1895.18	43.13	41.90	C-47	Collar													0.400		3625	
1937.08	41.90	41.11	C-48	Collar													0.400		3625	
1978.19	41.11	40.85	C-49	Collar													0.400		3625	
2019.05	40.85	41.40	C-50	Collar													0.400		3625	
2060.44	41.40	42.63	C-51	Collar													0.400		3625	
2103.07	42.63	41.07	C-52	Collar													0.400		3625	
2144.14	41.07	41.70	C-53	Collar													0.400		3625	
2158.84	14.70	41.70	MLCB-53-1	Metal Loss Call Box		External	1.1	1.1	17	PITT	4227	0.858	5926	0.612			0.400		3625	602
2158.88	14.74	41.70	MLC-53-1	Metal Loss Cluster		External	2.0	1.7	17	GENE	4227	0.858	5787	0.626	5753	0.630	0.400		3625	602
2158.93	14.79	41.70	MLCB-53-2	Metal Loss Call Box		External	0.8	1.4	16	PITT	4262	0.850	5973	0.607			0.400		3625	637
2167.49	23.35	41.70	MLCB-53-3	Metal Loss Call Box		External	0.8	1.4	15	PITT	4327	0.838	5978	0.606			0.400		3625	702
2185.84	41.70	41.39	C-54	Collar													0.400		3625	
2197.13	11.29	41.39	MLCB-54-1	Metal Loss Call Box		External	0.8	1.1	19	PITT	4130	0.878	5962	0.608			0.400		3625	505
2198.03	12.20	41.39	MLCB-54-2	Metal Loss Call Box		External	1.1	1.2	16	PITT	4307	0.842	5937	0.611			0.400		3625	682
2198.48	12.65	41.39	MLCB-54-3	Metal Loss Call Box		External	0.8	1.0	15	PITT	4336	0.836	5978	0.606			0.400		3625	711
2212.61	26.77	41.39	MLCB-54-4	Metal Loss Call Box		External	1.7	1.1	18	PITT	4201	0.863	5838	0.621			0.400		3625	576
2212.83	27.00	41.39	MLCB-54-5	Metal Loss Call Box		External	1.1	1.3	15	PITT	4336	0.836	5940	0.610			0.400		3625	711

Southern California Gas Company
Aliso Canyon
Fernando Fee 35B

Log Depth	Dist UHC	Joint Length	Identifier	Class	Description	Surface Indication	Length	Width	Depth	Dim Class	P Safe Barlow	ERF Barlow	P Safe Mod B31G	ERF Mod B31G	P Safe Effective Area	ERF Effective Area	NWT	Comment	115% MAOP	Delta MAOP (Barlow)
ft	ft	ft					in	in	%		psi		psi		psi		in		psi	psi
2224.49	38.65	41.39	MLCB-54-6	Metal Loss Call Box		External	1.9	1.9	15	GENE	4336	0.836	5840	0.621			0.400		3625	711
2227.23	41.39	42.01	C-55	Collar													0.400		3625	
2235.88	8.65	42.01	MLCB-55-1	Metal Loss Call Box		External	2.2	1.1	16	AXGR	4310	0.841	5788	0.626			0.400		3625	685
2241.37	14.14	42.01	MLCB-55-2	Metal Loss Call Box		External	1.1	1.2	16	PITT	4287	0.846	5939	0.610			0.400		3625	662
2242.62	15.39	42.01	MLCB-55-3	Metal Loss Call Box		External	0.7	1.0	21	PITT	4033	0.899	5979	0.606			0.400		3625	408
2242.94	15.71	42.01	MLCB-55-4	Metal Loss Call Box		External	1.6	1.4	15	GENE	4336	0.836	5885	0.616			0.400		3625	711
2269.24	42.01	41.08	C-56	Collar													0.400		3625	
2310.32	41.08	43.55	C-57	Collar													0.400		3625	
2318.22	7.90	43.55	MLCB-57-1	Metal Loss Call Box		External	0.8	0.7	15	PITT	4336	0.836	5978	0.606			0.400		3625	711
2353.87	43.55	41.05	C-58	Collar													0.400		3625	
2394.92	41.05	41.00	C-59	Collar													0.400		3625	
2435.92	41.00	41.18	C-60	Collar													0.400		3625	
2477.11	41.18	41.82	C-61	Collar													0.400		3625	
2518.93	41.82	42.68	C-62	Collar													0.400		3625	
2561.61	42.68	42.28	C-63	Collar													0.400		3625	
2603.89	42.28	42.29	C-64	Collar													0.400		3625	
2635.20	31.31	42.29	MLCB-64-1	Metal Loss Call Box		External	0.8	1.1	15	PITT	4336	0.836	5978	0.606			0.400		3625	711
2646.18	42.29	41.20	C-65	Collar													0.400		3625	
2687.38	41.20	42.20	C-66	Collar													0.400		3625	
2729.58	42.20	43.29	C-67	Collar													0.400		3625	
2772.88	43.29	42.19	C-68	Collar													0.400		3625	
2815.07	42.19	41.66	C-69	Collar													0.400		3625	
2856.73	41.66	41.71	C-70	Collar													0.400		3625	
2898.44	41.71	41.88	C-71	Collar													0.400		3625	
2940.32	41.88	42.52	C-72	Collar													0.400		3625	
2982.83	42.52	42.65	C-73	Collar													0.400		3625	
3025.48	42.65	41.57	C-74	Collar													0.400		3625	
3067.05	41.57	42.03	C-75	Collar													0.400		3625	
3109.08	42.03	38.97	C-76	Collar													0.400		3625	
3148.06	38.97	42.35	C-77	Collar													0.400		3625	
3190.40	42.35	42.31	C-78	Collar													0.400		3625	
3232.71	42.31	41.85	C-79	Collar													0.400		3625	
3274.56	41.85	41.09	C-80	Collar													0.400		3625	
3315.65	41.09	42.12	C-81	Collar													0.400		3625	
3357.77	42.12	42.90	C-82	Collar													0.400		3625	
3400.67	42.90	41.26	C-83	Collar													0.400		3625	
3441.93	41.26	42.40	C-84	Collar													0.400		3625	
3484.33	42.40	40.97	C-85	Collar													0.400		3625	
3525.30	40.97	42.16	C-86	Collar													0.400		3625	
3567.46	42.16	40.87	C-87	Collar													0.400		3625	
3608.34	40.87	42.68	C-88	Collar													0.400		3625	
3651.02	42.68	37.87	C-89	Collar													0.400		3625	
3688.89	37.87	42.20	C-90	Collar													0.400		3625	
3731.09	42.20	42.27	C-91	Collar													0.400		3625	
3773.37	42.27	42.10	C-92	Collar													0.400		3625	
3815.45	42.09	42.10	H-92-1	Hardware	Centralizer												0.400		3625	
3815.47	42.10	43.54	C-93	Collar													0.400		3625	
3859.01	43.54	42.83	C-94	Collar													0.400		3625	
3901.80	42.80	42.83	H-94-1	Hardware	Centralizer												0.400		3625	
3901.84	42.83	42.26	C-95	Collar													0.400		3625	
3944.10	42.26	44.17	C-96	Collar													0.400		3625	
3979.22	35.12	44.17	MLCB-96-1	Metal Loss Call Box		External	0.7	1.6	15	CIGR	4336	0.836	5989	0.605			0.400		3625	711
3984.60	40.50	44.17	H-96-1	Hardware	Centralizer												0.400		3625	
3987.46	43.36	44.17	H-96-2	Hardware	DV Tool												0.400	Stage Collar	3625	
3988.27	44.17	44.17	C-97	Collar													0.400		3625	
4031.12	42.85	27.40	C-98	Collar													0.400		3625	
4058.52	27.40	41.50	C-99	Collar													0.400		3625	
4100.02	41.50	43.24	C-100	Collar													0.400		3625	
4100.40	0.38	43.24	H-100-1	Hardware	Centralizer												0.400		3625	
4143.26	43.24	41.88	C-101	Collar													0.400		3625	
4185.14	41.88	42.59	C-102	Collar													0.400		3625	
4185.22	0.07	42.59	H-102-1	Hardware	Centralizer												0.400		3625	
4227.73	42.59	41.66	C-103	Collar													0.400		3625	
4269.40	41.66	39.68	C-104	Collar													0.400		3625	
4269.83	0.44	39.68	H-104-1	Hardware	Centralizer												0.400		3625	
4309.08	39.68	42.90	C-105	Collar													0.400		3625	
4351.98	42.90	42.40	C-106	Collar													0.400		3625	
4394.38	42.40	41.61	C-107	Collar													0.400		3625	
4435.99	41.61	42.40	C-108	Collar													0.400		3625	
4478.39	42.40	42.52	C-109	Collar													0.400		3625	

Log Depth	Dist UHC	Joint Length	Identifier	Class	Description	Surface Indication	Length	Width	Depth	Dim Class	P Safe Barlow	ERF Barlow	P Safe Mod B31G	ERF Mod B31G	P Safe Effective Area	ERF Effective Area	NWT	Comment	115% MAOP	Delta MAOP (Barlow)
ft	ft	ft					in	in	%		psi		psi		psi		in		psi	psi
4520.91	42.52	38.35	C-110	Collar													0.400		3625	
4559.26	38.35	41.28	C-111	Collar													0.400		3625	
4600.54	41.28	41.50	C-112	Collar													0.400		3625	
4642.04	41.50	41.07	C-113	Collar													0.400		3625	
4683.11	41.07	42.22	C-114	Collar													0.400		3625	
4725.33	42.22	39.77	C-115	Collar													0.400		3625	
4765.11	39.77	42.50	C-116	Collar													0.400		3625	
4807.61	42.50	39.40	C-117	Collar													0.400		3625	
4847.01	39.40	41.71	C-118	Collar													0.400		3625	
4888.72	41.71	41.81	C-119	Collar													0.400		3625	
4930.53	41.81	42.23	C-120	Collar													0.400		3625	
4972.76	42.23	42.64	C-121	Collar													0.400		3625	
5015.40	42.64	41.66	C-122	Collar													0.400		3625	
5057.06	41.66	41.83	C-123	Collar													0.400		3625	
5098.89	41.83	42.42	C-124	Collar													0.400		3625	
5141.31	42.42	42.03	C-125	Collar													0.400		3625	
5183.34	42.03	41.80	C-126	Collar													0.400		3625	
5225.15	41.80	42.57	C-127	Collar													0.400		3625	
5267.72	42.57	36.81	C-128	Collar													0.400		3625	
5304.53	36.81	41.72	C-129	Collar													0.400		3625	
5346.26	41.72	41.68	C-130	Collar													0.400		3625	
5387.93	41.68	42.44	C-131	Collar													0.400		3625	
5430.38	42.44	42.20	C-132	Collar													0.400		3625	
5472.58	42.20	40.30	C-133	Collar													0.400		3625	
5512.88	40.30	42.43	C-134	Collar													0.400		3625	
5555.28	42.41	42.43	H-134-1	Hardware	Centralizer												0.400		3625	
5555.31	42.43	42.69	C-135	Collar													0.400		3625	
5598.00	42.69	42.52	C-136	Collar													0.400		3625	
5640.52	42.52	42.52	C-137	Collar													0.400		3625	
5640.72	0.20	42.39	H-137-1	Hardware	Centralizer												0.400		3625	
5682.91	42.39	41.15	C-138	Collar													0.400		3625	
5724.01	41.10	41.15	H-138-1	Hardware	Centralizer												0.400		3625	
5724.06	41.15	41.15	C-139	Collar													0.400		3625	
5765.91	41.85	29.37	C-140	Collar													0.400		3625	
5795.27	29.37	42.16	C-141	Collar													0.400		3625	
5795.72	0.45	42.16	H-141-1	Hardware	Centralizer												0.400		3625	
5837.43	42.16	42.69	C-142	Collar													0.400	8 5/8" Casing Grade change, K-55 36 lb/ft above and N-80 36 lb/ft below.	3625	
5880.06	42.63	42.69	H-142-1	Hardware	Centralizer												0.400		3625	
5880.12	42.69	41.11	C-143	Collar													0.400		3625	
5921.23	41.11	42.39	C-144	Collar													0.400		3625	
5963.62	42.39	42.39	C-145	Collar													0.400		3625	
5963.65	0.03	41.97	H-145-1	Hardware	Centralizer												0.400		3625	
6005.59	41.97	41.98	C-146	Collar													0.400		3625	
6047.38	41.79	41.98	H-146-1	Hardware	Centralizer												0.400		3625	
6047.57	41.98	41.98	C-147	Collar													0.400		3625	
6090.23	42.67	42.45	C-148	Collar													0.400		3625	
6132.68	42.45	42.45	C-149	Collar													0.400		3625	
6132.89	0.21	42.84	H-149-1	Hardware	Centralizer												0.400		3625	
6175.52	42.84	41.13	C-150	Collar													0.400		3625	
6216.65	41.13	41.13	C-151	Collar													0.400		3625	
6216.67	0.03	41.91	H-151-1	Hardware	Centralizer												0.400		3625	
6258.56	41.91	40.63	C-152	Collar													0.400		3625	
6299.19	40.63	40.63	C-153	Collar													0.400		3625	
6299.68	0.50	42.08	H-153-1	Hardware	Centralizer												0.400		3625	
6341.27	42.08	42.08	C-154	Collar													0.400		3625	
6341.53	0.26	42.84	H-154-1	Hardware	Centralizer												0.400		3625	
6384.11	42.84	42.18	C-155	Collar													0.400		3625	
6426.16	42.05	42.18	H-155-1	Hardware	Centralizer												0.400		3625	
6426.29	42.18	41.48	C-156	Collar													0.400		3625	
6467.76	41.48	42.48	C-157	Collar													0.400		3625	
6510.17	42.41	42.48	H-157-1	Hardware	Centralizer												0.400		3625	
6510.25	42.48	42.48	C-158	Collar													0.400		3625	
6552.00	41.75	42.93	C-159	Collar													0.400		3625	
6594.93	42.93	42.93	C-160	Collar													0.400		3625	
6595.09	0.16	42.36	H-160-1	Hardware	Centralizer												0.400		3625	
6637.29	42.36	42.11	C-161	Collar													0.400		3625	
6679.41	42.11	42.11	C-162	Collar													0.400		3625	
6679.70	0.30	40.95	H-162-1	Hardware	Centralizer												0.400		3625	

Southern California Gas Company
Aliso Canyon
Fernando Fee 35B

Log Depth	Dist UHC	Joint Length	Identifier	Class	Description	Surface Indication	Length	Width	Depth	Dim Class	P Safe Barlow	ERF Barlow	P Safe Mod B31G	ERF Mod B31G	P Safe Effective Area	ERF Effective Area	NWT	Comment	115% MAOP	Delta MAOP (Barlow)
ft	ft	ft					in	in	%		psi		psi		psi		in		psi	psi
6720.36	40.95	42.55	C-163	Collar													0.400		3625	
6762.79	42.43	42.55	H-163-1	Hardware	Centralizer												0.400		3625	
6762.91	42.55	42.24	C-164	Collar													0.400		3625	
6805.15	42.24	39.41	C-165	Collar													0.400		3625	
6844.56	39.41	42.59	C-166	Collar													0.400		3625	
6844.64	0.08	42.59	H-166-1	Hardware	Centralizer												0.400		3625	
6867.50	22.94	42.59	MLCB-166-1	Metal Loss Call Box		Internal	0.7	1.4	17	PITT	6143	0.590	8283	0.438			0.400		3625	2518
6887.15	42.59	42.46	C-167	Collar													0.400		3625	
6907.94	20.79	42.46	MLCB-167-1	Metal Loss Call Box		Internal	0.5	0.6	26	PITT	5455	0.664	8290	0.437			0.400		3625	1830
6929.61	42.46	42.84	C-168	Collar													0.400		3625	
6929.68	0.07	42.84	H-168-1	Hardware	Centralizer												0.400		3625	
6969.86	40.25	42.84	MLCB-168-1	Metal Loss Call Box		Internal	1.0	0.9	18	PITT	6080	0.596	8228	0.441			0.400		3625	2455
6972.45	42.84	42.72	C-169	Collar													0.400		3625	
7014.92	42.47	42.72	H-169-1	Hardware	Centralizer												0.400		3625	
7015.17	42.72	34.73	C-170	Collar													0.400		3625	
7024.83	9.65	34.73	MLCB-170-1	Metal Loss Call Box		Internal	1.6	6.5	16	GENE	6233	0.582	8132	0.446			0.400		3625	2608
7025.67	10.50	34.73	MLCB-170-2	Metal Loss Call Box		Internal	1.4	3.9	18	GENE	6085	0.596	8150	0.445			0.400		3625	2460
7049.90	34.73		C-171	Interpretation Boundary															3625	

Ex. II - 22

Schlumberger

Company: Southern California Gas Company

Well: Frew 4

Field: Aliso Canyon

County: Los Angeles State: California

Ultrasonic Imager

Gamma Ray - CCL

7" casing

County: Los Angeles
Field: Aliso Canyon
Location:
Well: Frew 4
Company: Southern California Gas Company

Location:

		Elev.: K.B.	2428.00 ft
		G.L.	2419.75 ft
		D.F.	
Permanent Datum:	Ground Level	Elev.:	2419.75 f
Log Measured From:	Kelly Bushing	8.25 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		

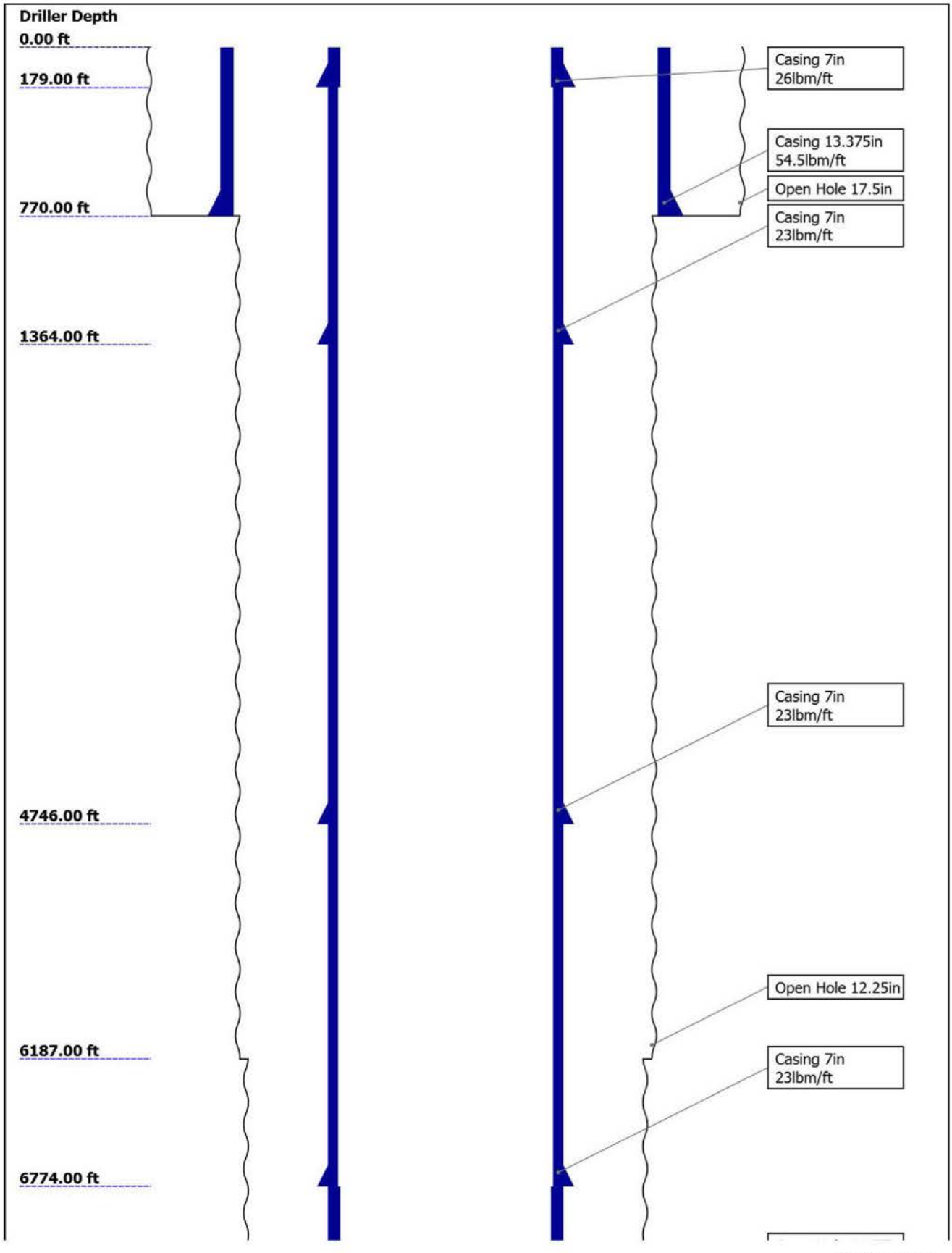
API Serial No.	Section:	Township:	Range:
04-037-00667-00	29	3N	16W

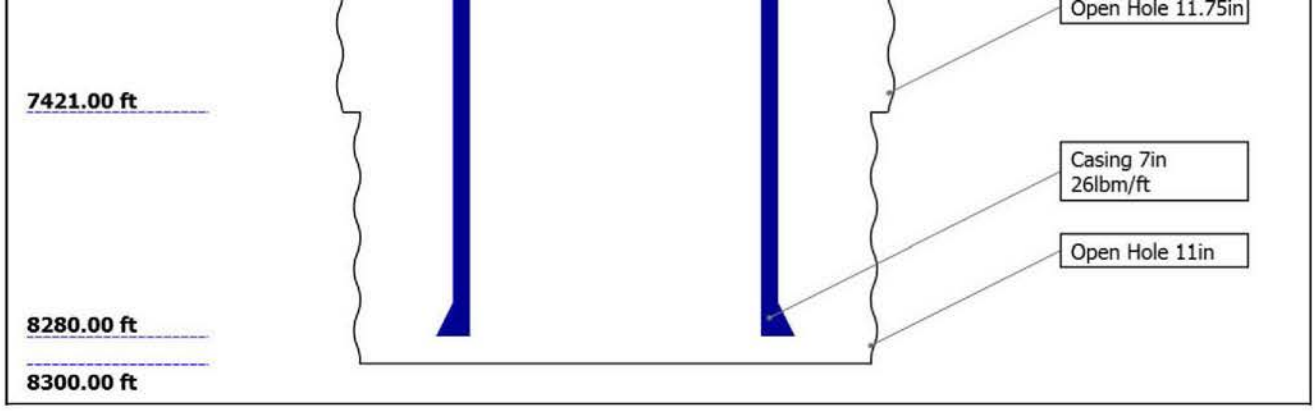
Logging Date		19-Oct-2016			
Run Number		Two			
Depth Driller		8176.00 ft			
Schlumberger Depth		8176.00 ft			
Bottom Log Interval		8168.00 ft			
Top Log Interval		7.00 ft			
Casing Fluid Type		KCl Brine with Polymer			
Salinity					
Density		9 lbm/gal			
Fluid Level		8.00 ft			
BIT/CASING/TUBING STRING					
Bit Size		11.00 in			
From		7421.00 ft			
To		8300.00 ft			
Casing/Tubing Size		7 in			
Weight		26 lbm/ft			
Grade		N80			
From		6774.00 ft			
To		8280.00 ft			
Max Recorded Temperatures					
Logger on Bottom	Time	20-Oct-2016	09:51:00		
Unit Number	Location:	3189	Ventura		
Recorded By		I. Kartawidjaja			
Witnessed By		Mr. Tom McMahon			

Disclaimer

Contents

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	17.5	12.25	11.75	11		
Top Driller (ft)	0	770	6187	7421		
Top Logger (ft)	0	770	6187	7421		
Bottom Driller (ft)	770	6187	7421	8300		
Bottom Logger (ft)	770	6187	7421	8300		
Casing						
Size (in)	13.375	7	7	7	7	7
Weight (lbm/ft)	54.5	26	23	23	23	26
Inner Diameter (in)	12.615	6.276	6.366	6.366	6.366	6.276
Grade	J55	N80	N80	J55	N80	N80
Top Driller (ft)	0	0	179	1364	4746	6774
Top Logger (ft)	0	0	179	1364	4746	6774
Bottom Driller (ft)	770	179	1364	4746	6774	8280
Bottom Logger (ft)	770	179	1364	4746	6774	8280

Remarks and Equipment Summary

Two: Toolstring

Equip name	Length
LEH-QT:2867	**57.51**
LEH-QT:2867	
DTC-H	**54.59**
ECH-KC	
DTC-H	
HGNS-H:3923	**51.59**
HGNH:4819	
NPV-N	
NSR-F:1303	
HMCA-H	
HGNS-H:3923	
HACCZ-H:4177	
AH-184[	**42.18**

MP name	Offset
Red	
CTEM	**53.69**
HV	**0.00**
TelStatus	**51.59**
ToolStatus	**51.59**
Temperature	**51.57**
GR	**50.85**
CNL Porosity	**44.52**
HGNS	**42.18**
HMCA	**42.18**
Accelerometer	**0.00**

Two: Remarks

Depth correlated to Neutron Lifetime Log dated 4-19-74. Tied-in to Neutron curves between 7700-8100 ft

USIT logged at 10 deg 1.5 inch, speed 3200 fph. No hi-res repeat recorded as requested by client.

Main pass recorded with 0 psi surface pressure. Repeat pass recorded with 1000 psi from TD to ~6900 ft.

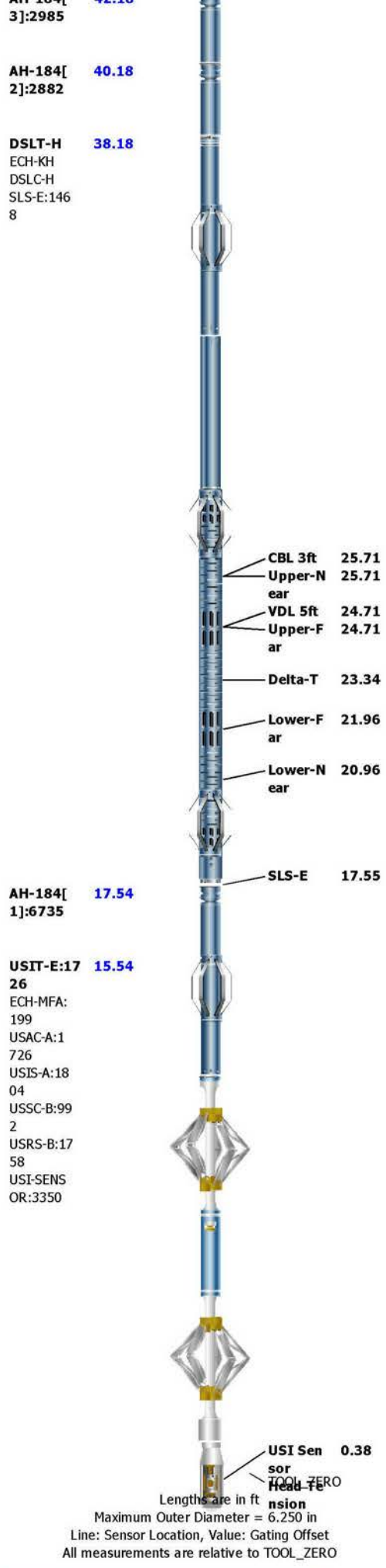
Logged from above top of sand at ~8168 ft to surface.

Rig: Ensign 334

Toolstring ran as per toolsketch.

Two centralizers on USIS and two CME-Y used to centralize ultrasonic tool.

Thank you for choosing Schlumberger!



Job Event Summary

Event	Time	Duration	Interval	Remark

Event	Time	Duration	Interval	Remark
Log[1]:Down	Oct-19-2016 13:19	01:54:44	185.28 - 8127.82 ft	Fluid Properties Measurement
Log[6]:Up	Oct-19-2016 14:46	00:24:25	8162.42 - 6845.38 ft	Repeat Pass 1000 PSI
Log[9]:Up	Oct-20-2016 09:51	00:29:01	8170.38 - 6638.82 ft	Main Pass #1 0 PSI
Log[11]:Up	Oct-20-2016 10:24	02:09:06	6736.16 - 35.34 ft	Main Pass #2 0 PSI
Log[14]:Up	Oct-20-2016 12:53	00:04:58	153.18 - 3.59 ft	Main Pass #3 0 PSI

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[11]:Up	6737.51	36.69

Fluid Velocity = "Automatic".
CFVL equals DFSL channel

Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)

Mud Impedance = "FreePipe Norm.".
Free Pipe normalization zone is : 120.75m(396.17ft) to 129.39m(424.50ft)
MUD_N_FRP = 1.10
DFD = 1.08g/cm3(9.00lbm/gal)
CZMD median computed in free pipe normalization interval = 1.80 MRayl

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)

Composite 1

Main Pass 5 in = 100 ft

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100
Application Patch	Wireline_Hotfix-Perfo-2016SP1_6.1.63773

Computation	Description	Version
CEVAL	Sonic Cement Evaluation Computation Ensemble provides common Parameters and Channels	6.1.58882.3100
Cementation	Cementation Computation Application	6.1.58882.3100

SoftwareVersion_Tool	SoftwareVersion_Run Version	SoftwareVersion_Build Version
WAFE-SEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-FEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-TMDI	Synergy SV451EC version 46.19	Synergy SV451EC version 46.19

Tool Elements	Description	Software Version	Firmware Version
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	6.1.58882.3100	2.0
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	6.1.58882.3100	4.0
USI-SENSOR	USIT Transducer Element	6.1.58882.3100	DSP: v1.82

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Two	Log[9]:Up	Up	6640.29 ft	8171.85 ft	20-Oct-2016 9:51:39 AM	20-Oct-2016 10:20:40 AM	ON	1.47 ft	No
Two	Log[11]:Up	Up	36.69 ft	6737.51 ft	20-Oct-2016 10:24:53 AM	20-Oct-2016 12:34:00 PM	ON	1.35 ft	No
Two	Log[14]:Up	Up	5.56 ft	155.15 ft	20-Oct-2016 12:53:24 PM	20-Oct-2016 12:58:23 PM	ON	1.96 ft	No

All depths are referenced to toolstring zero

Log

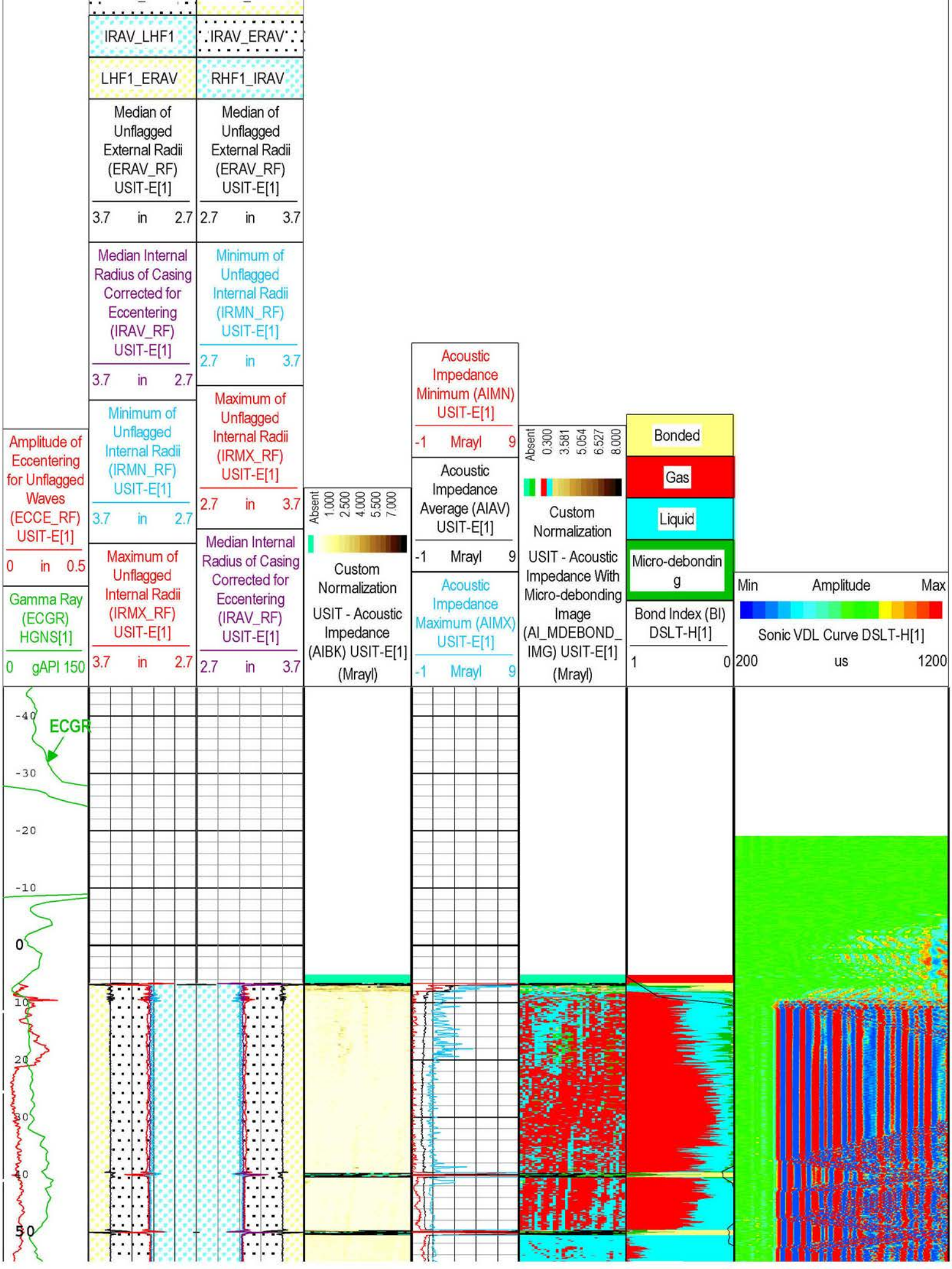
Company:Southern California Gas Company Well:Frew 4

Composite 1:S008

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 20-Oct-2016 14:28:02

TIME_1900 - Time Marked every 60.00 (s)

ERAV IRAV ERAV RHF1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IRAV_ERAV
LHF1_ERAV
RHF1_IRAV
Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.7 in 2.7
Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
2.7 in 3.7
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.7 in 2.7
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
2.7 in 3.7
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.7 in 2.7
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
2.7 in 3.7
Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
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2.7 in 3.7
Gamma Ray (ECGR) HGNS[1]
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ECGR
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-30
-20
-10
0
10
20
30
40
50
Absent 1.000 2.500 4.000 5.500 7.000
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USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9
Absent 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
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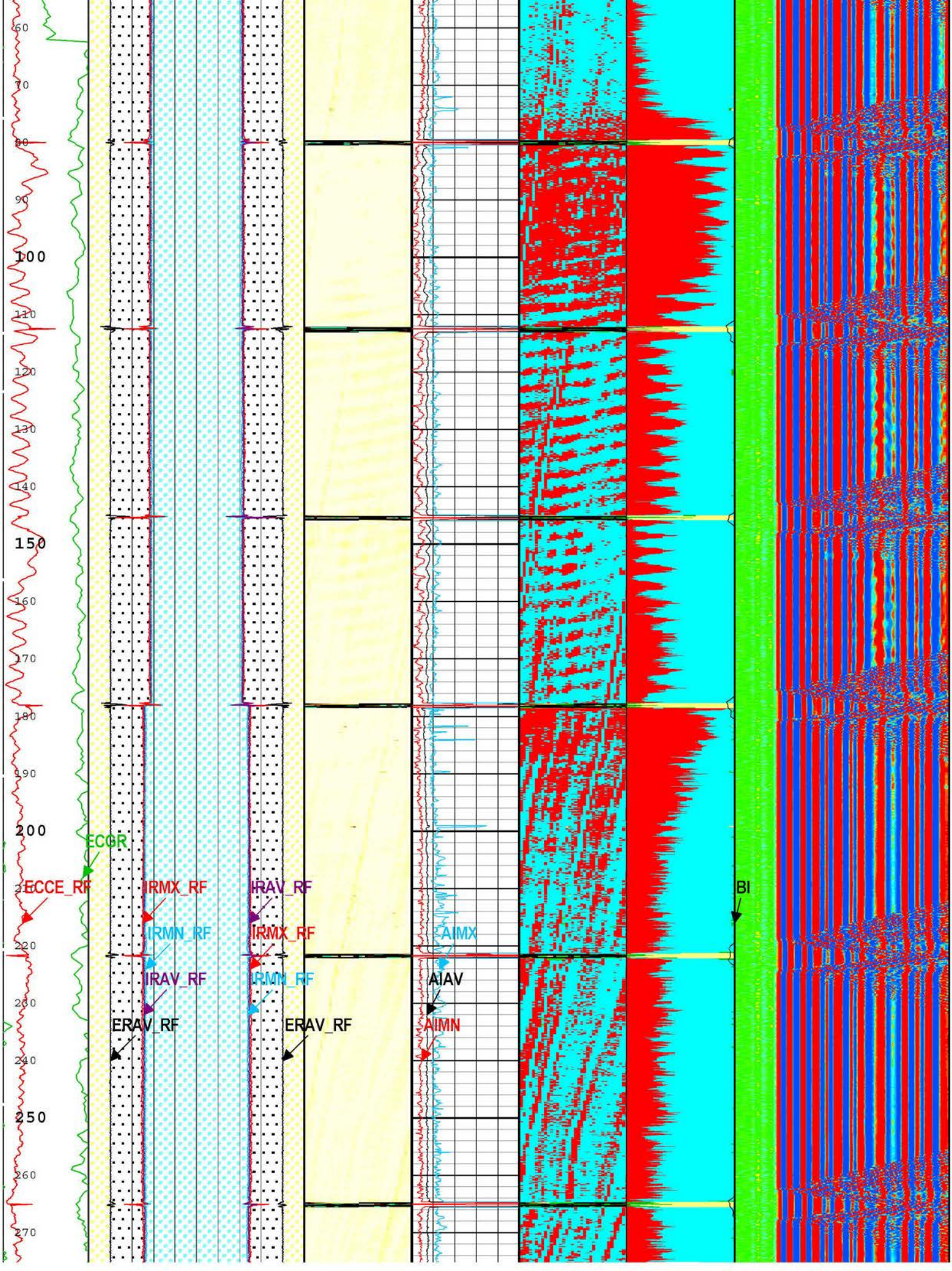
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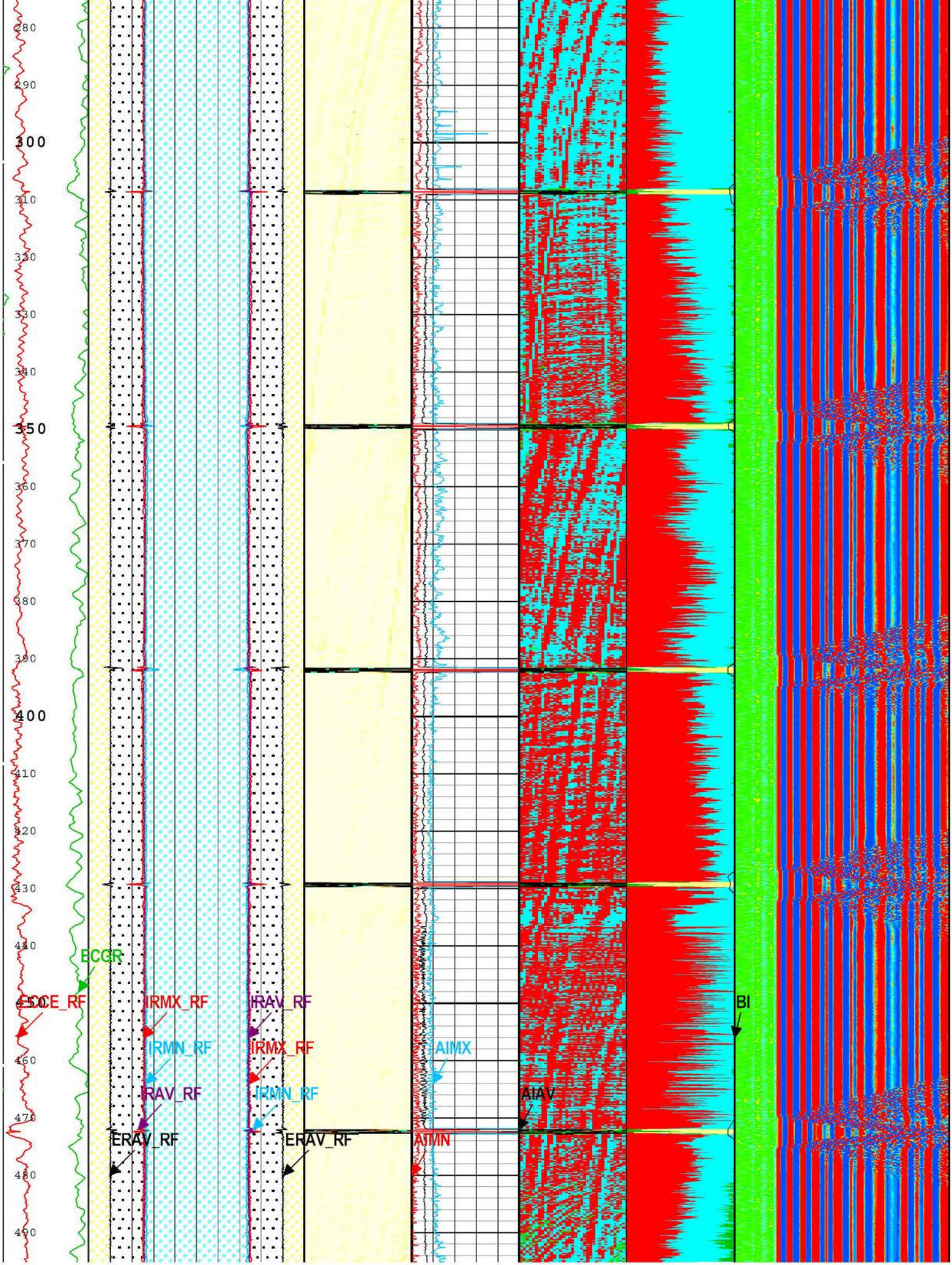
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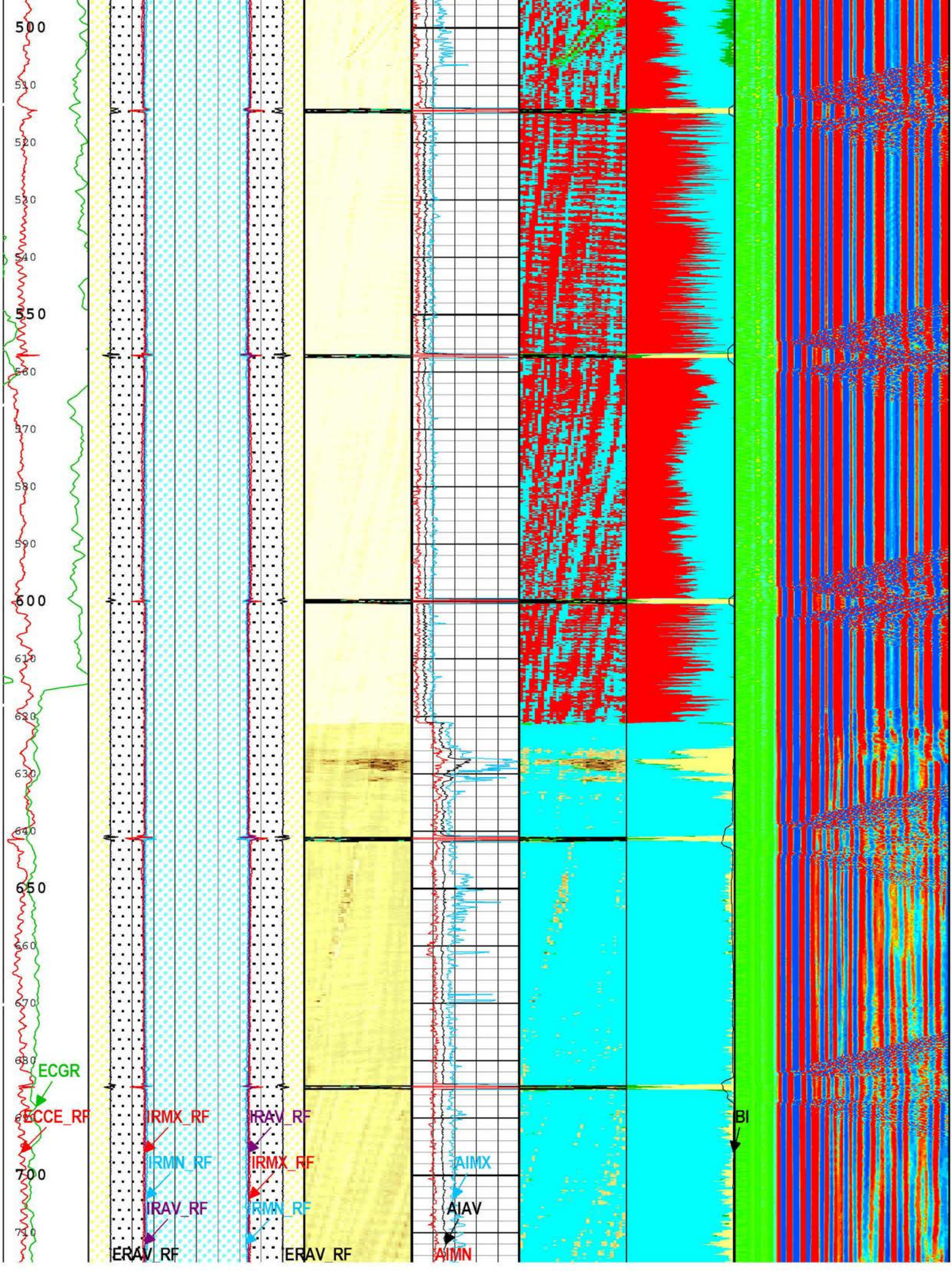
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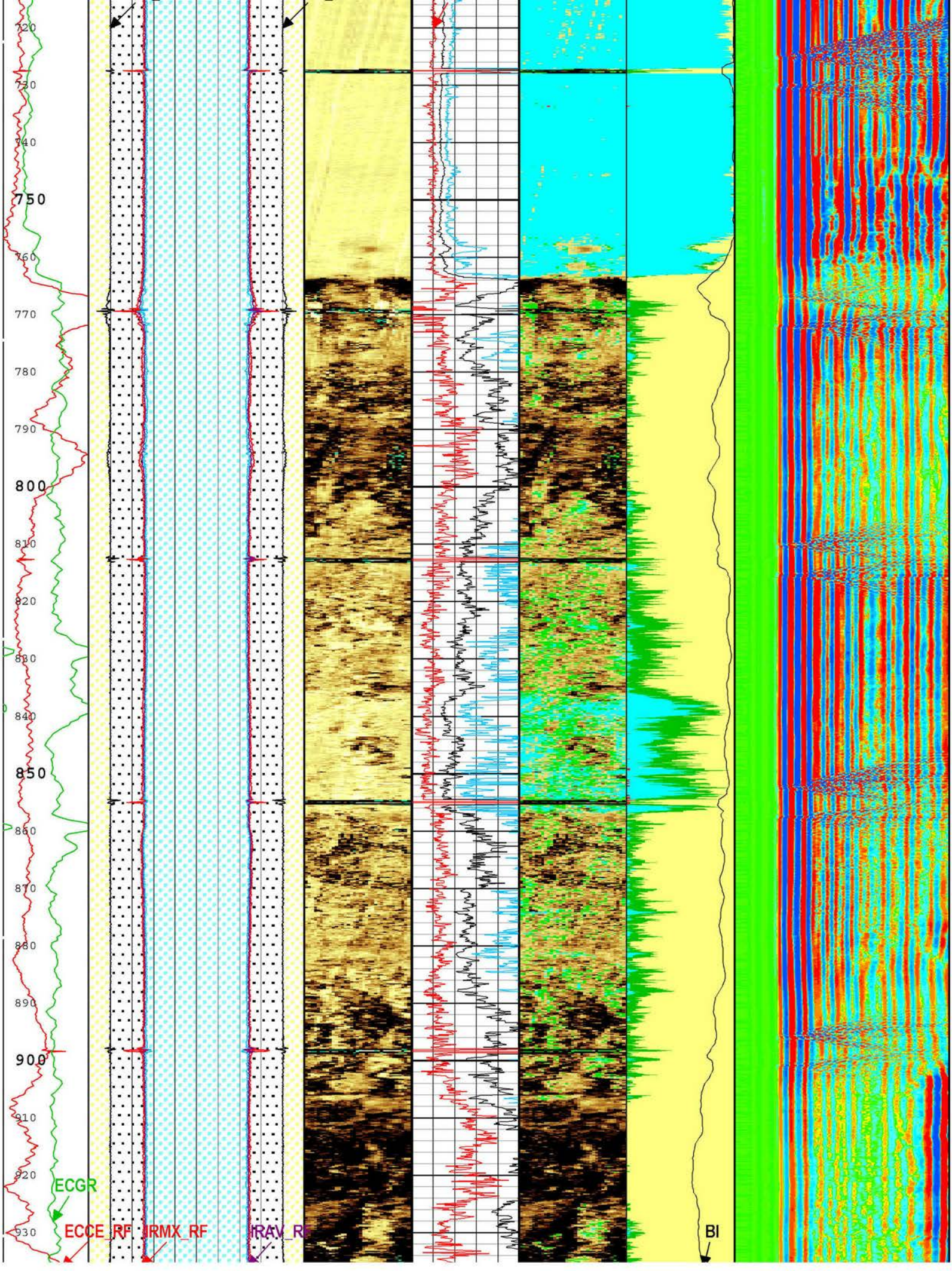
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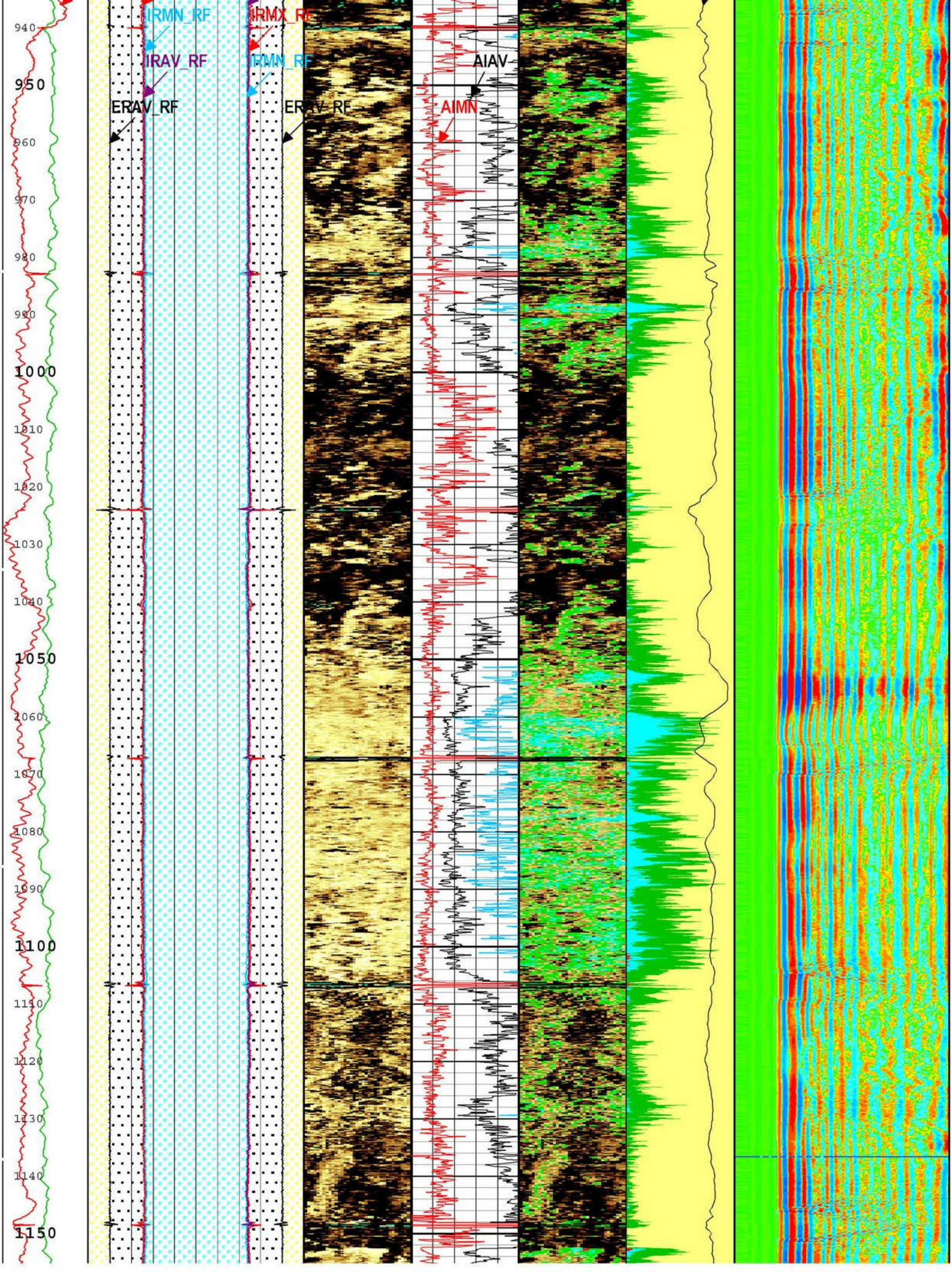
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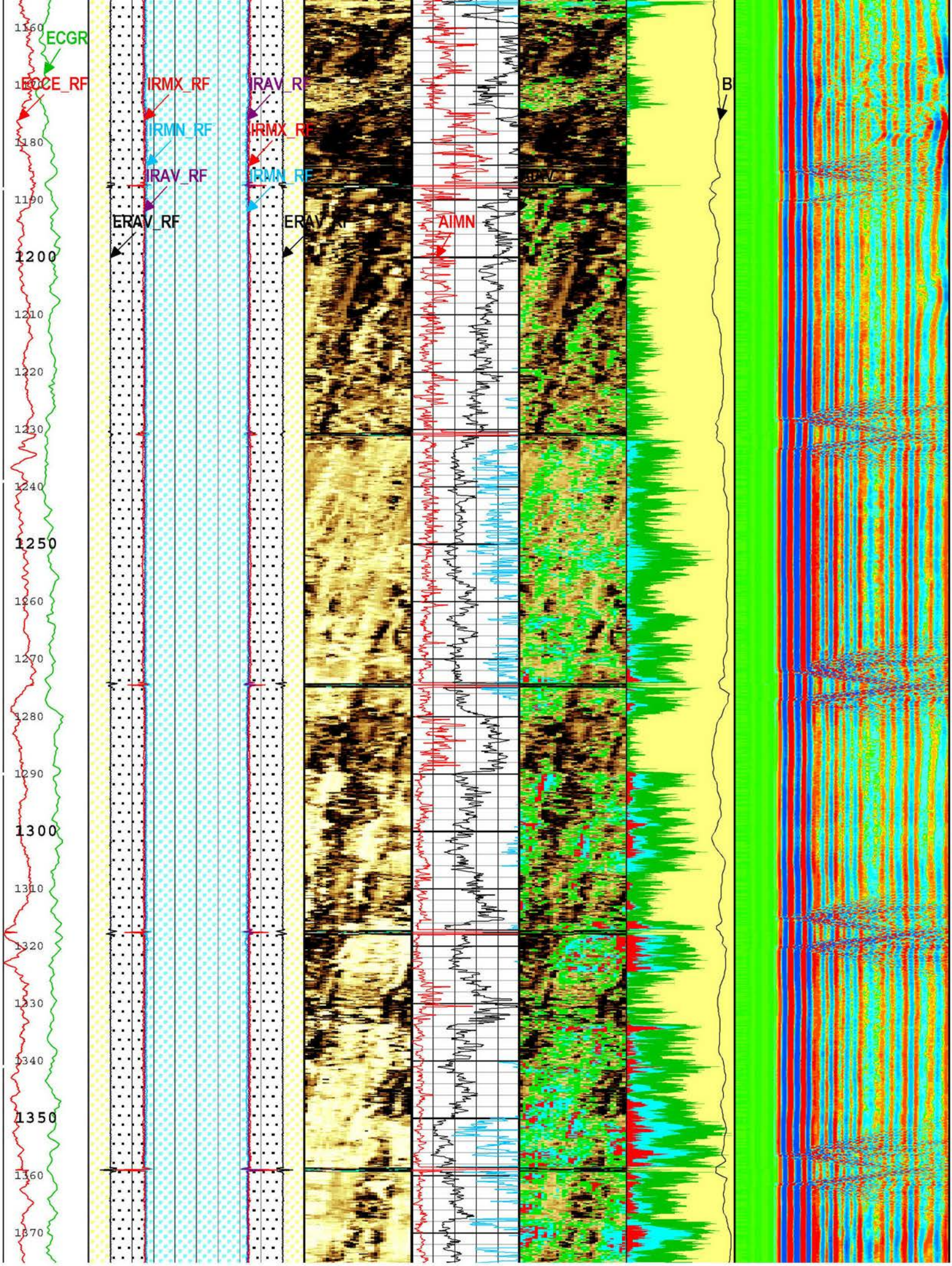
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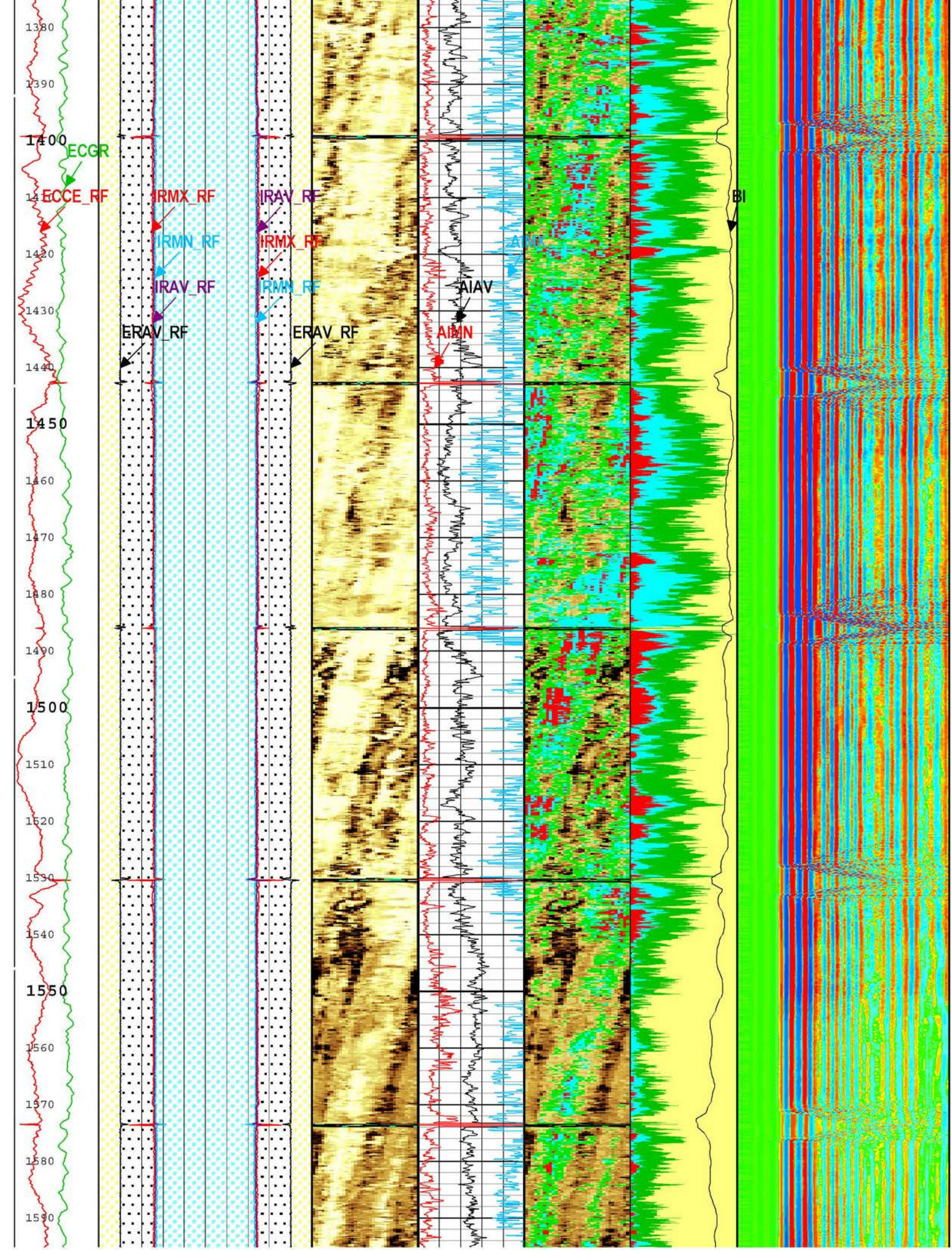
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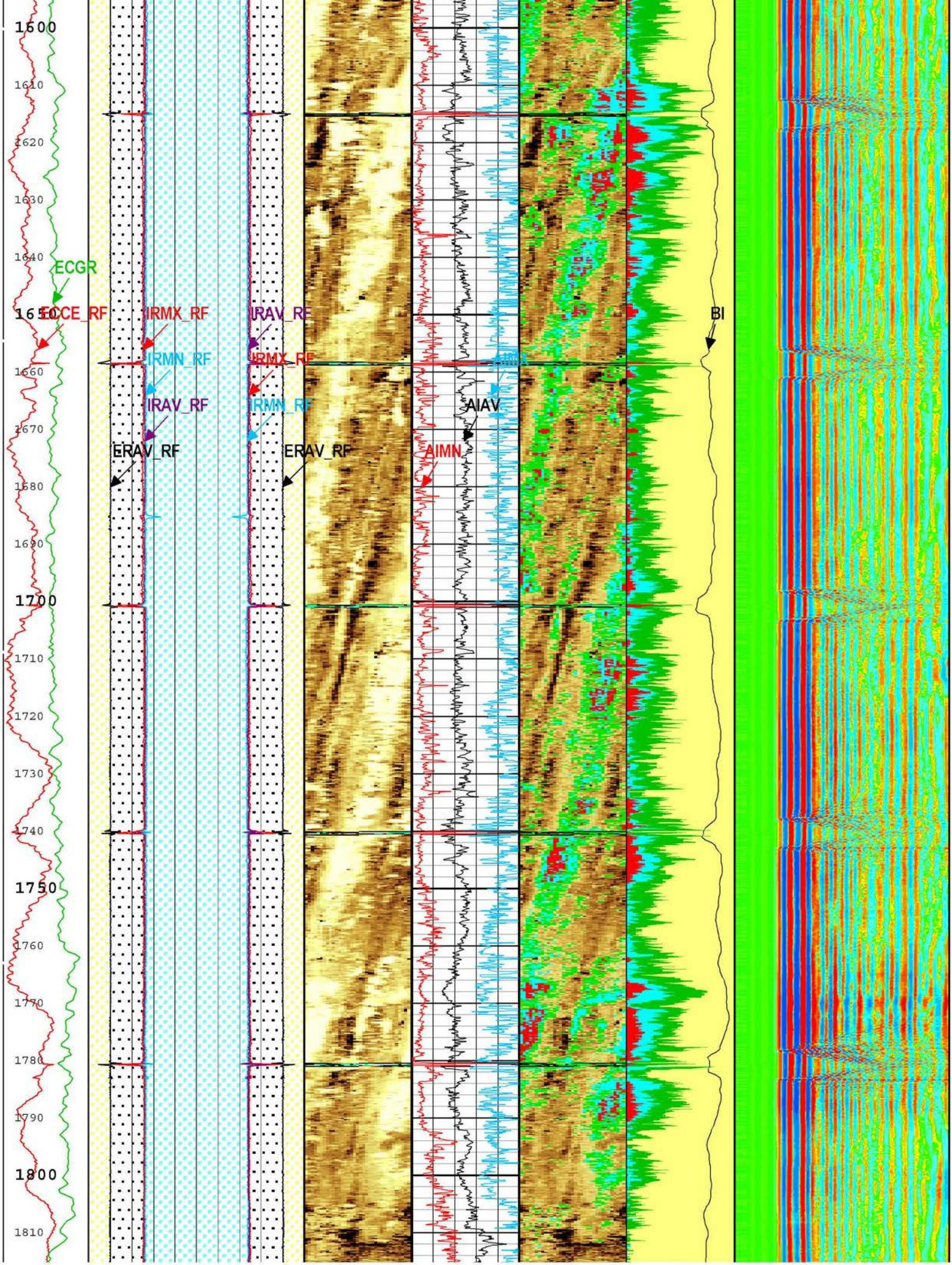
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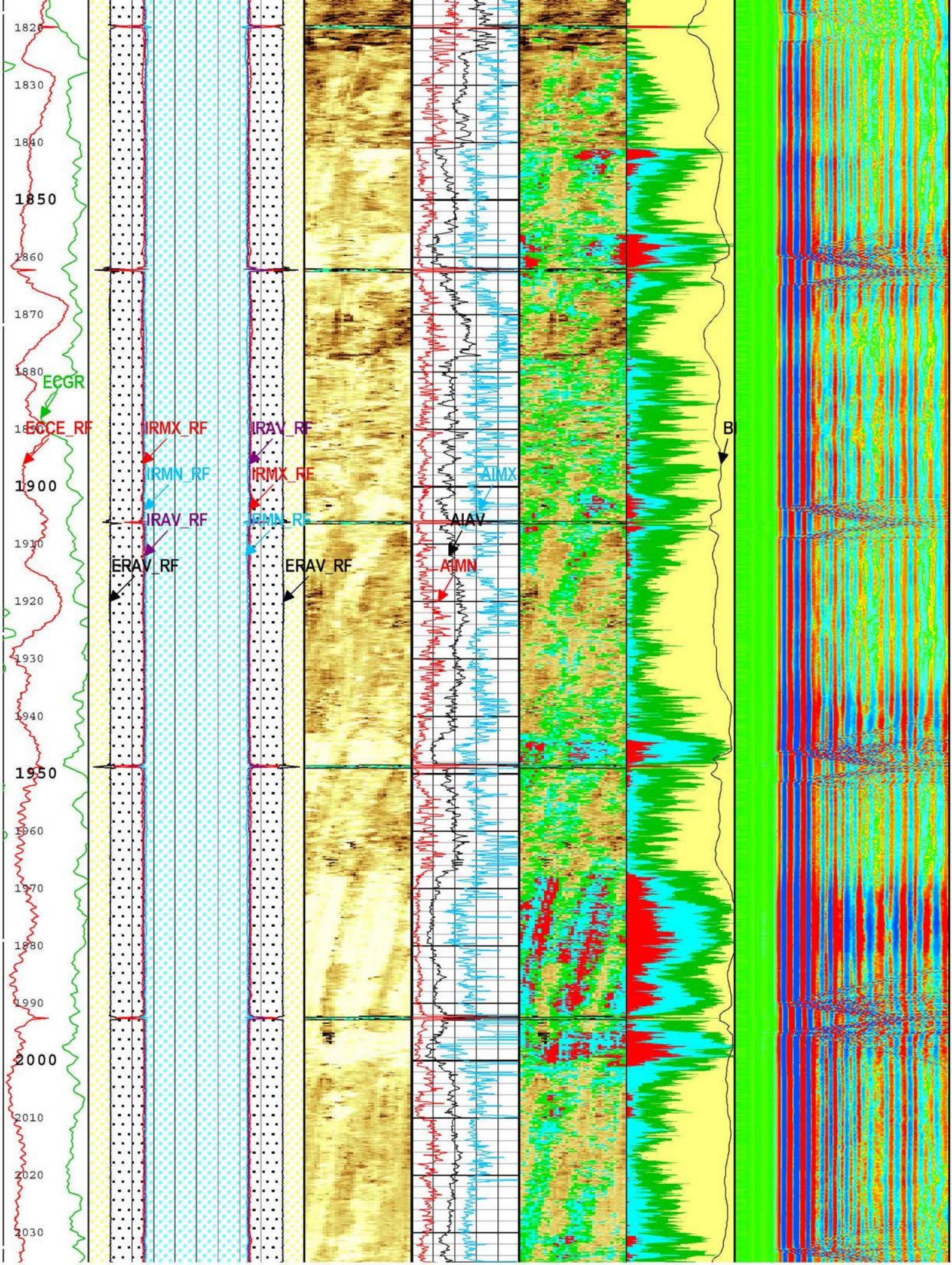
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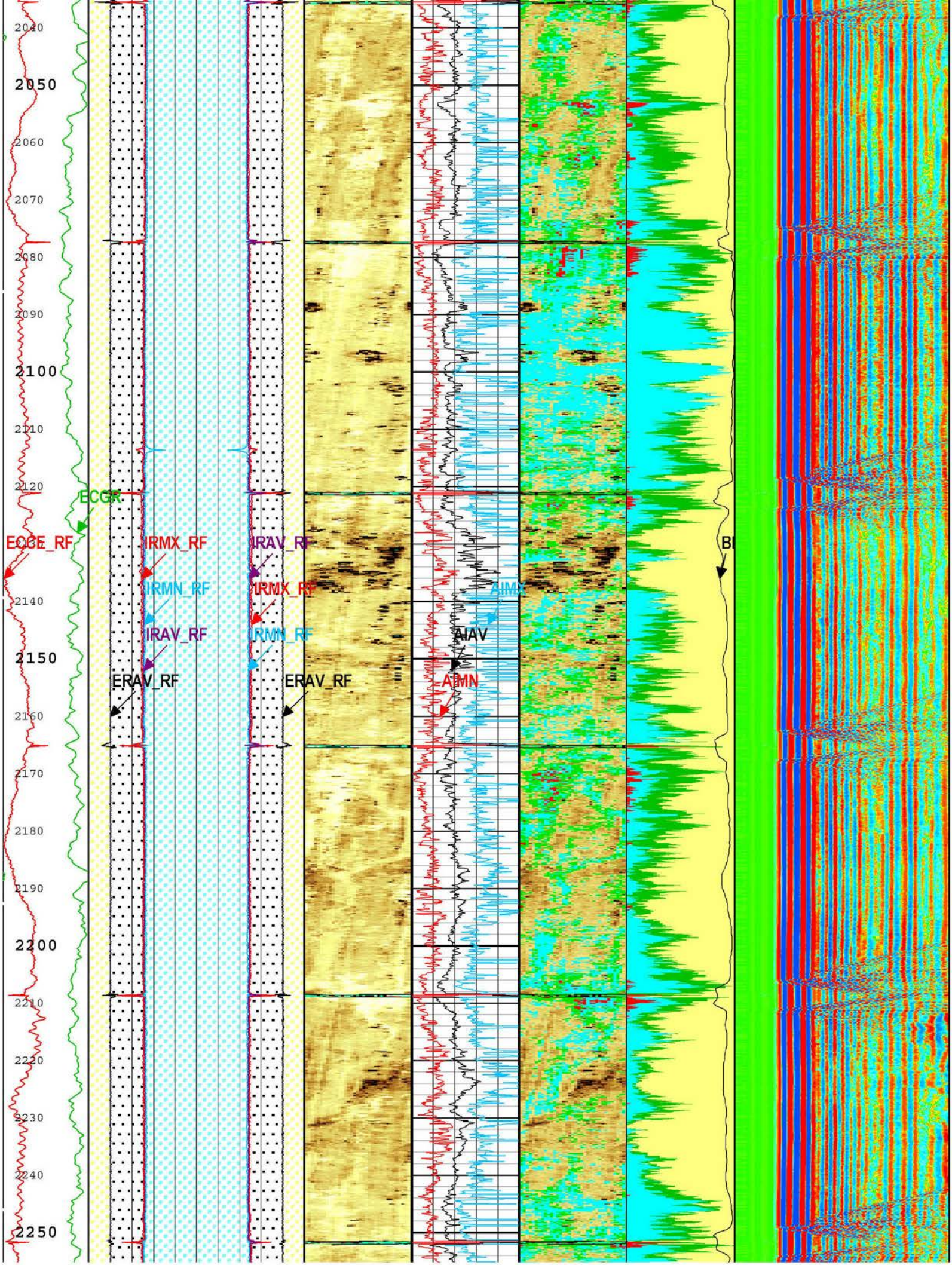
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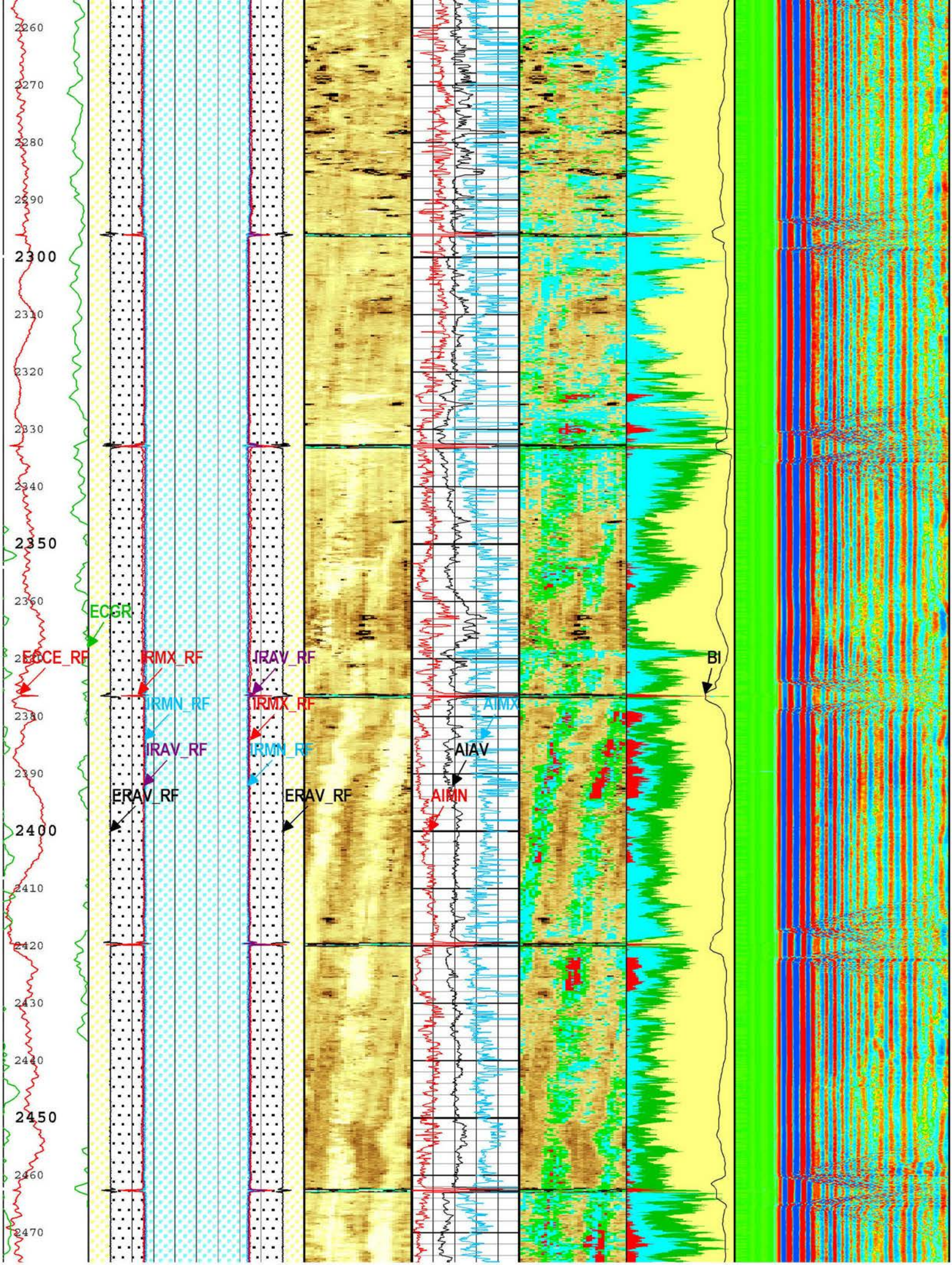
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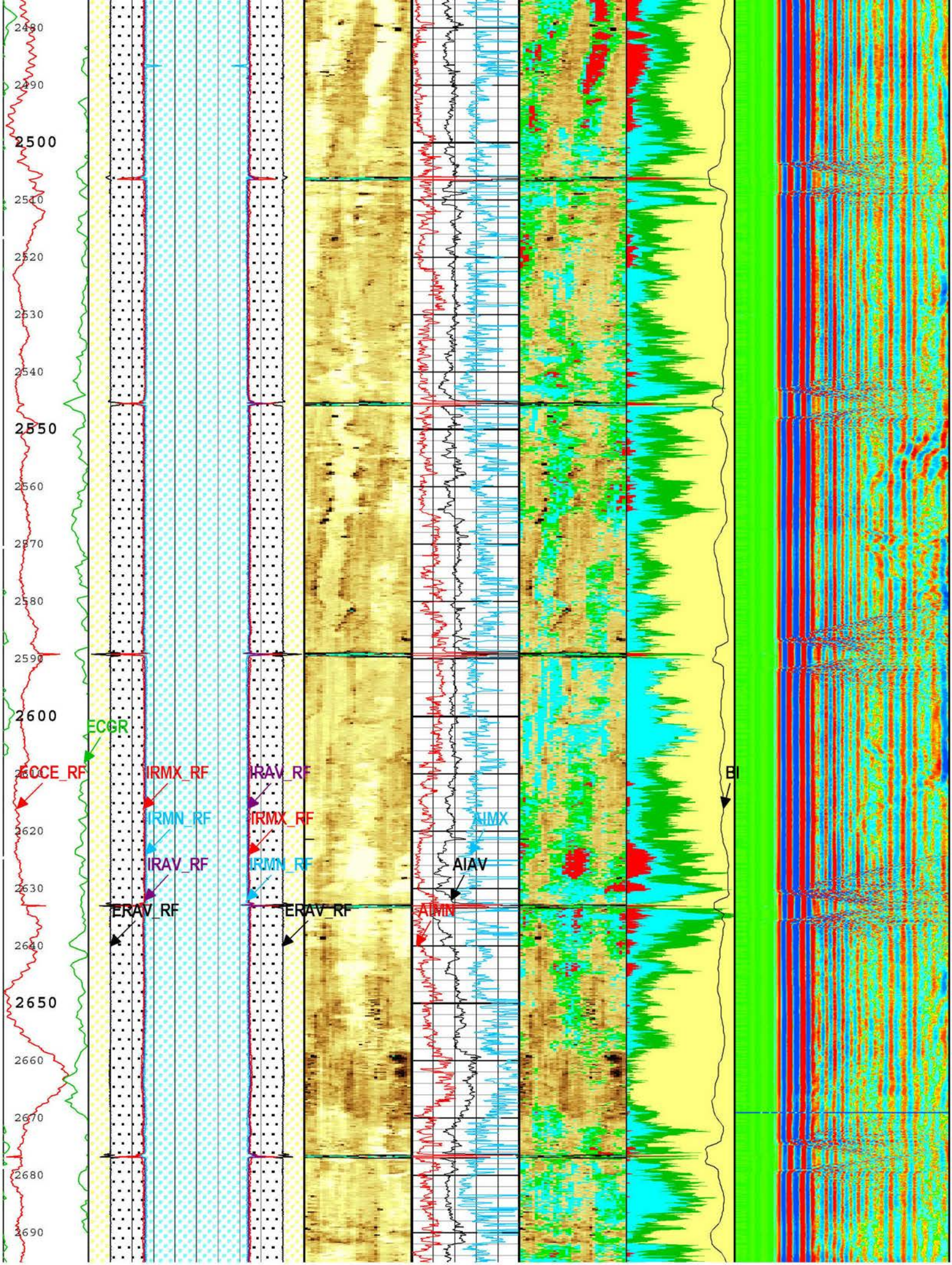
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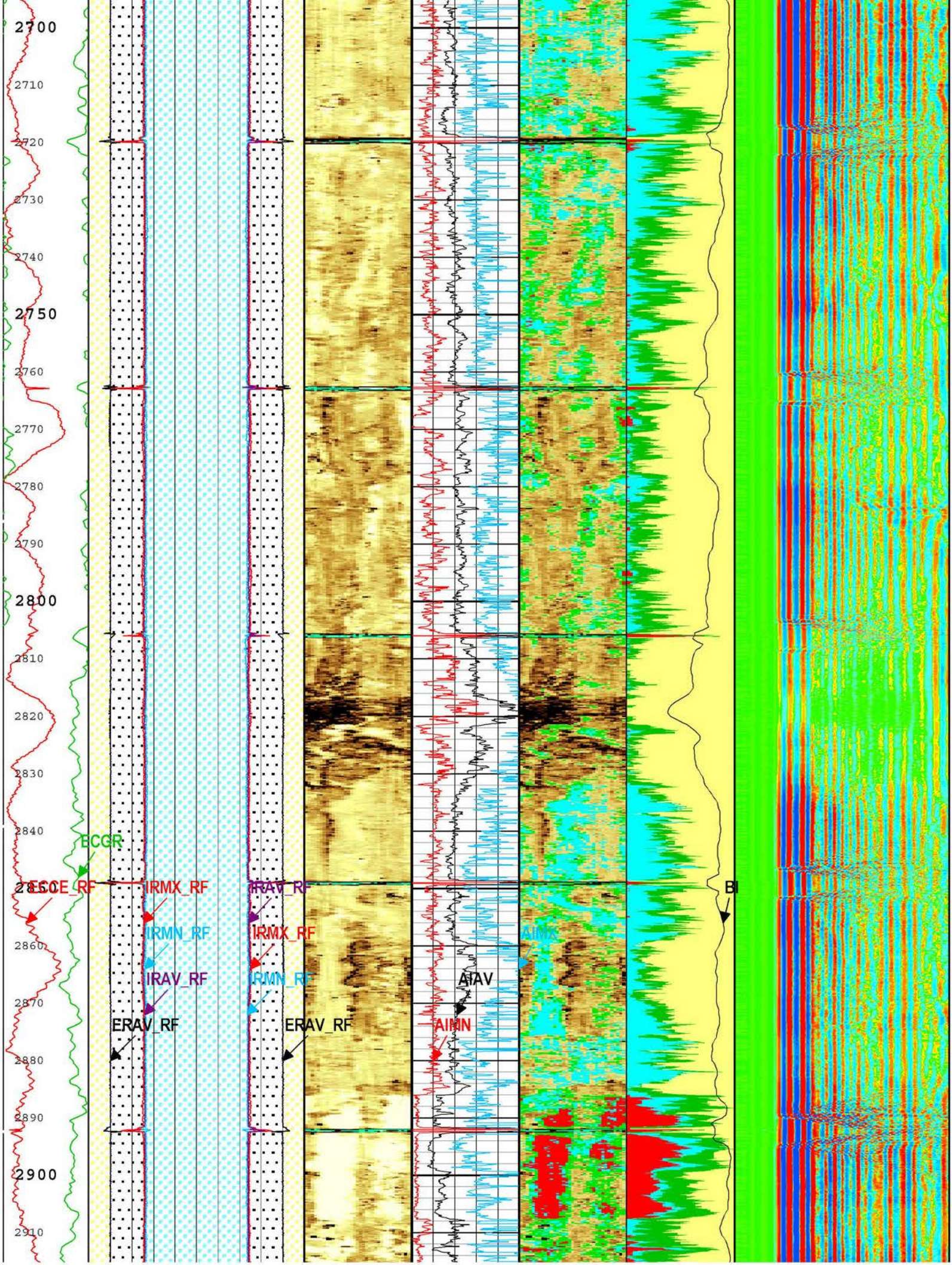
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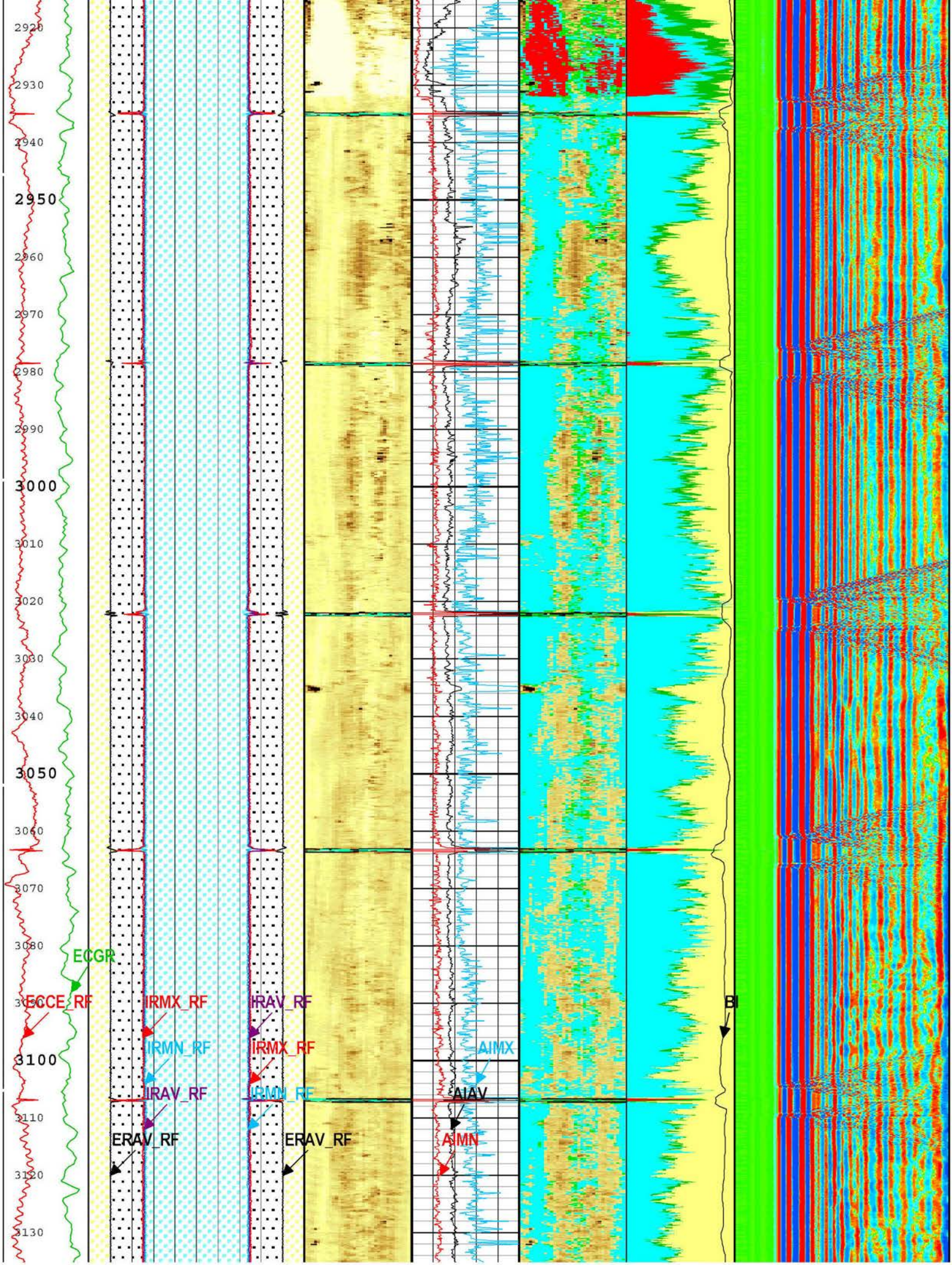
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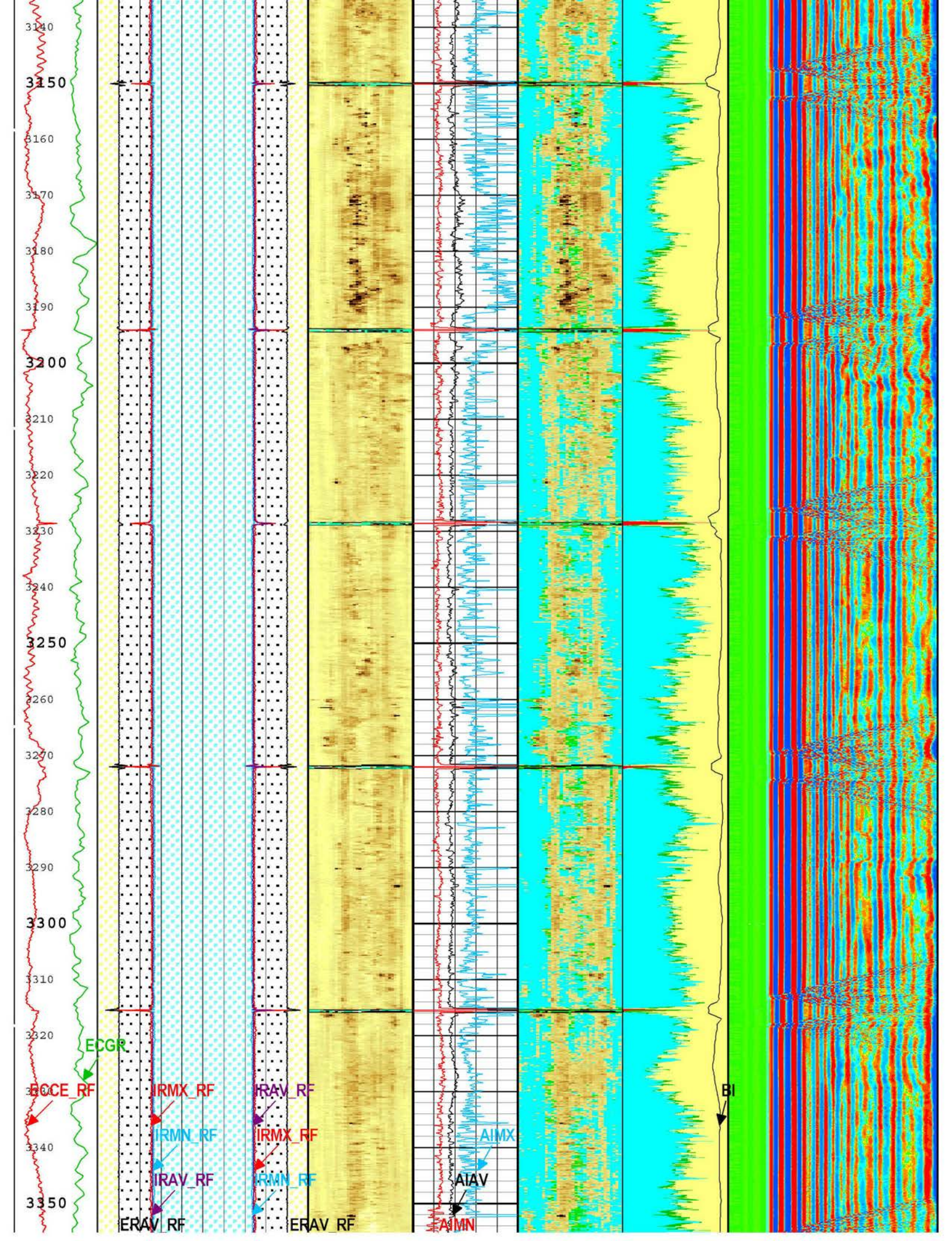
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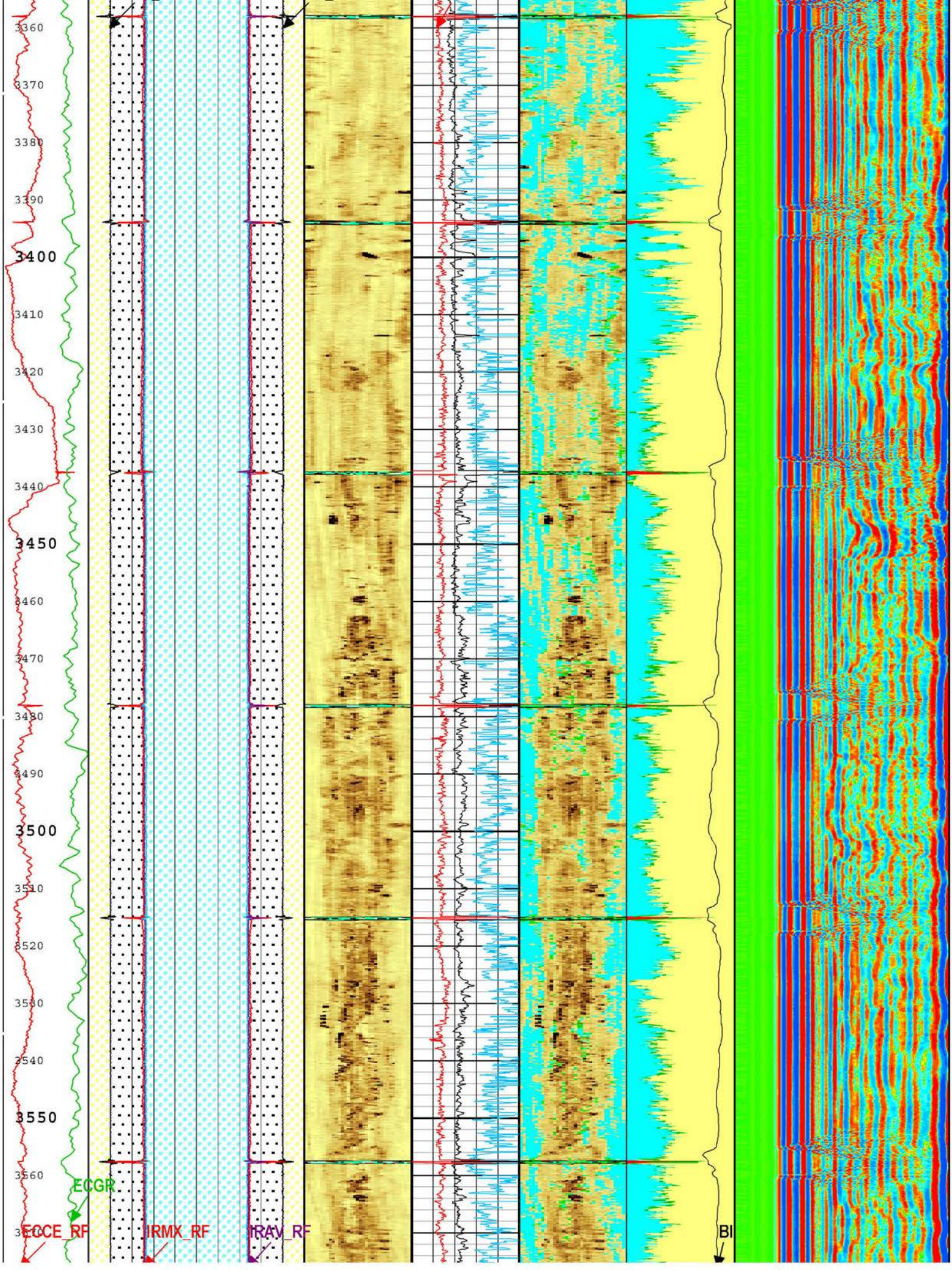
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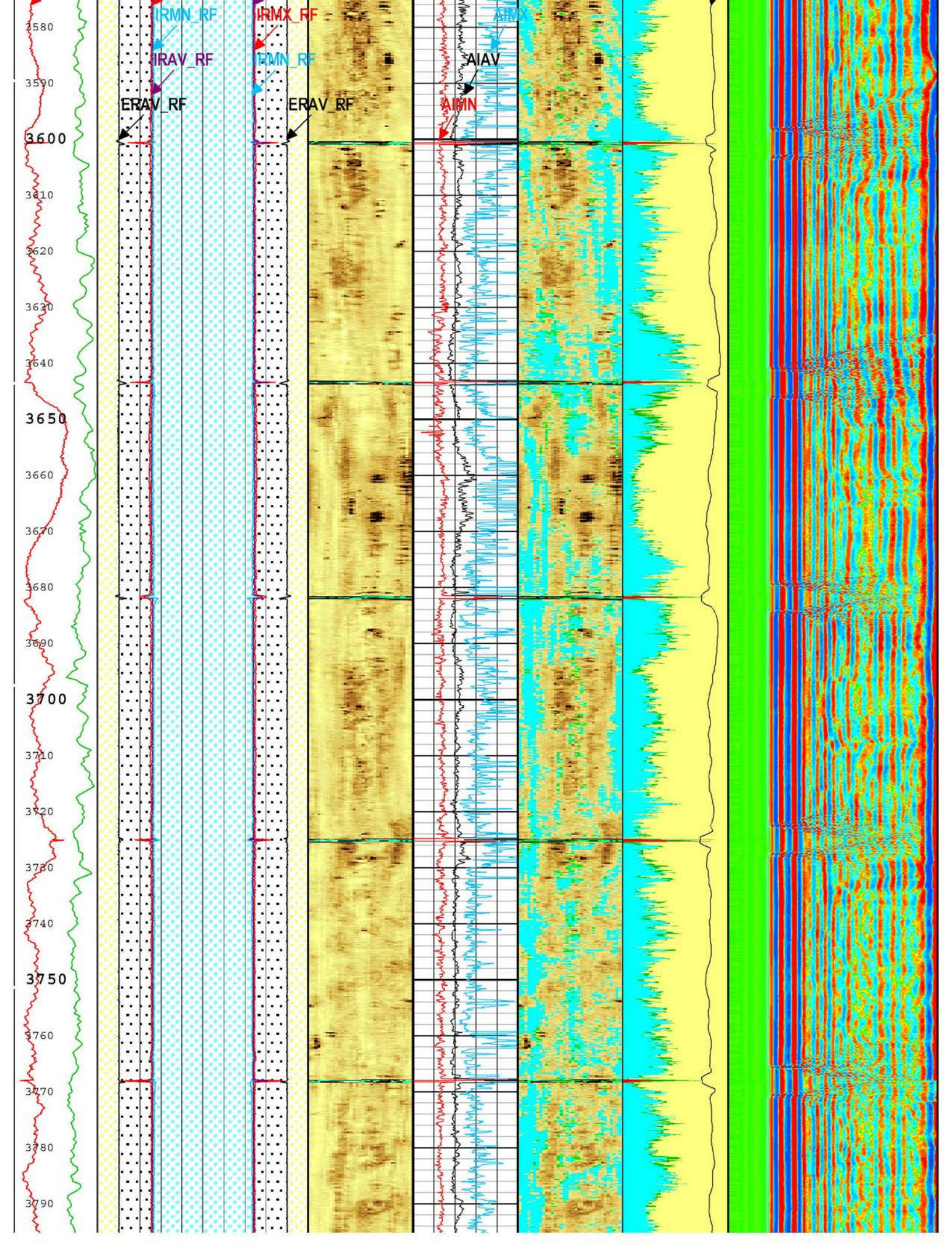
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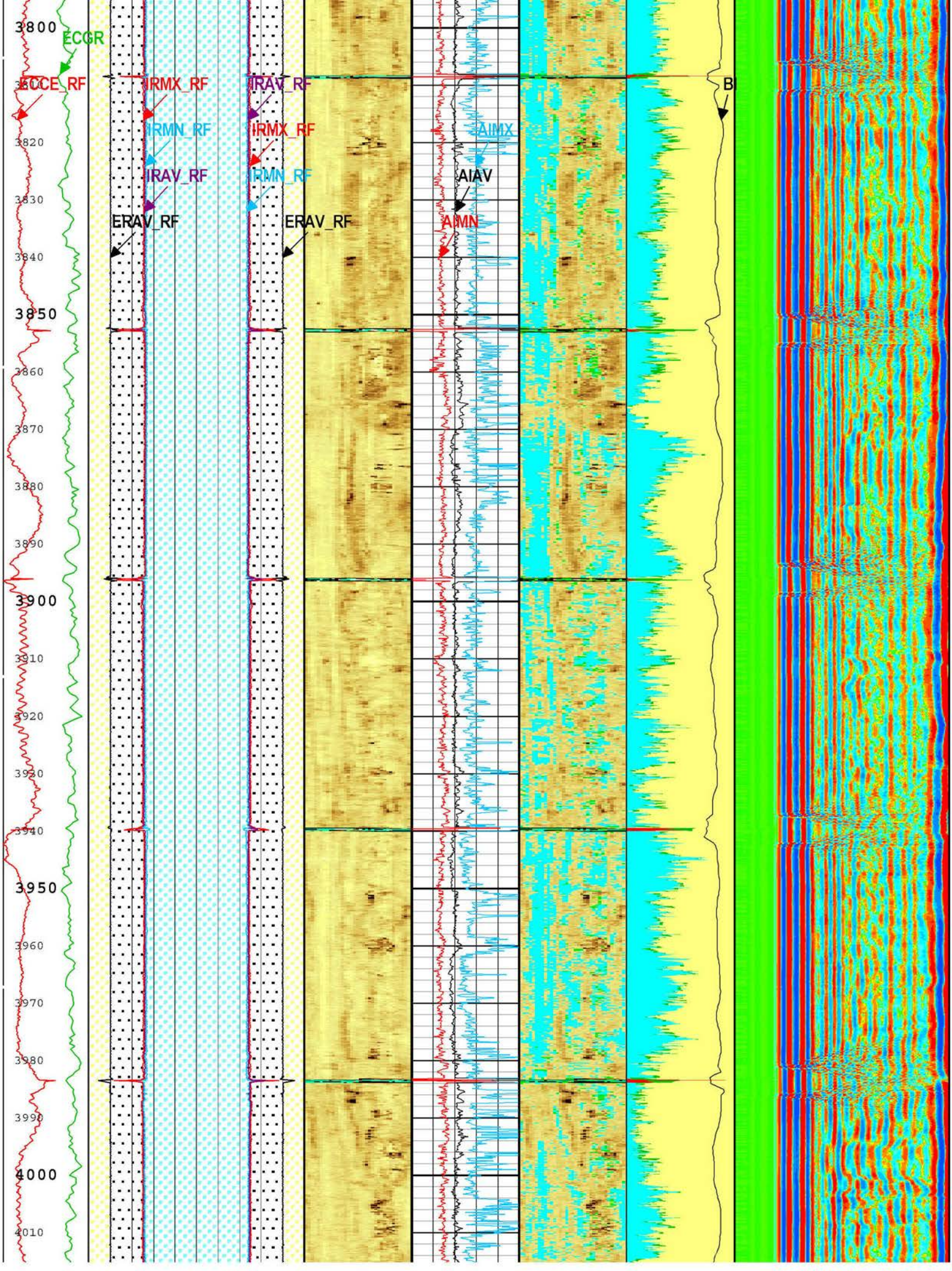
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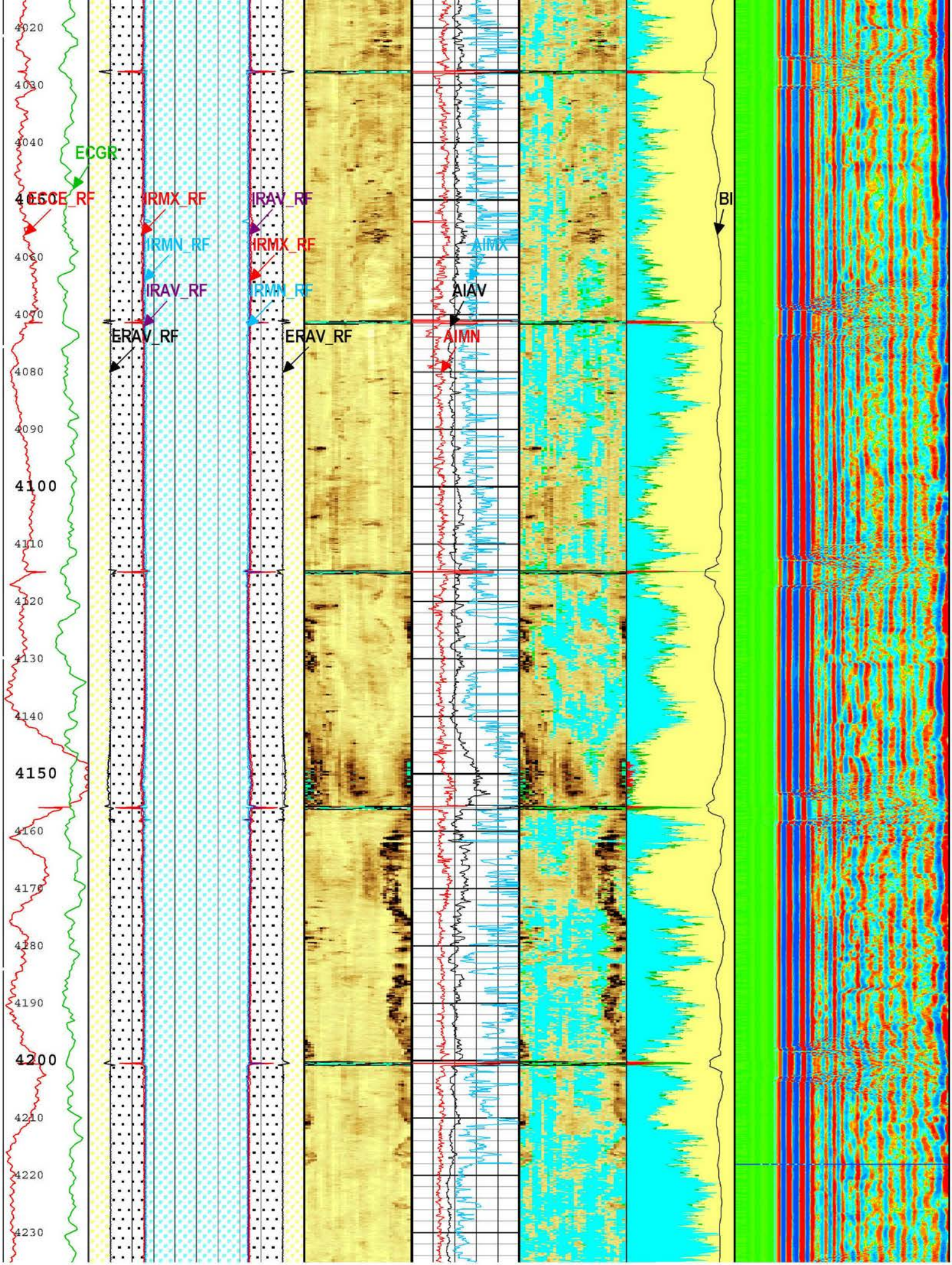
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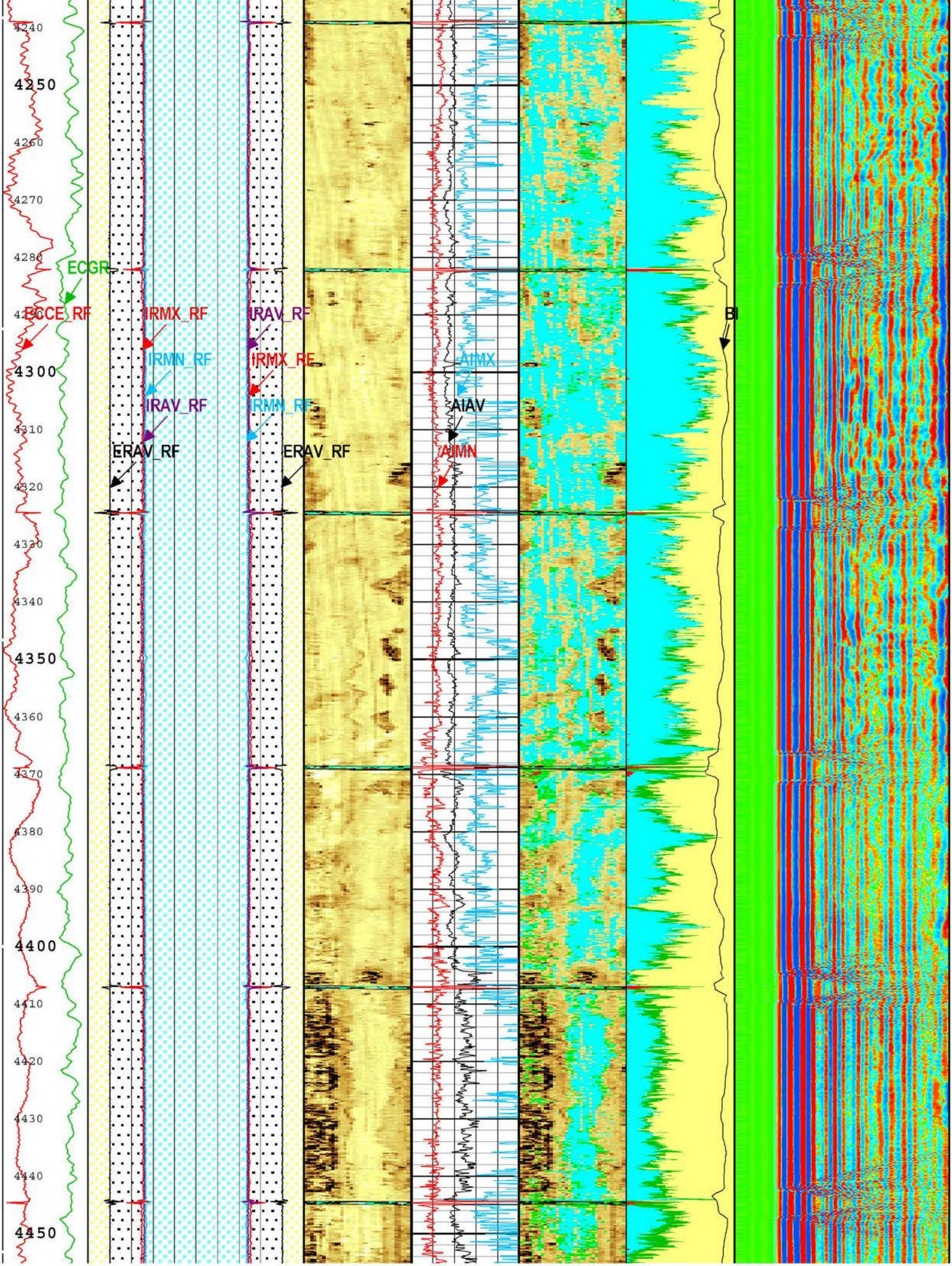
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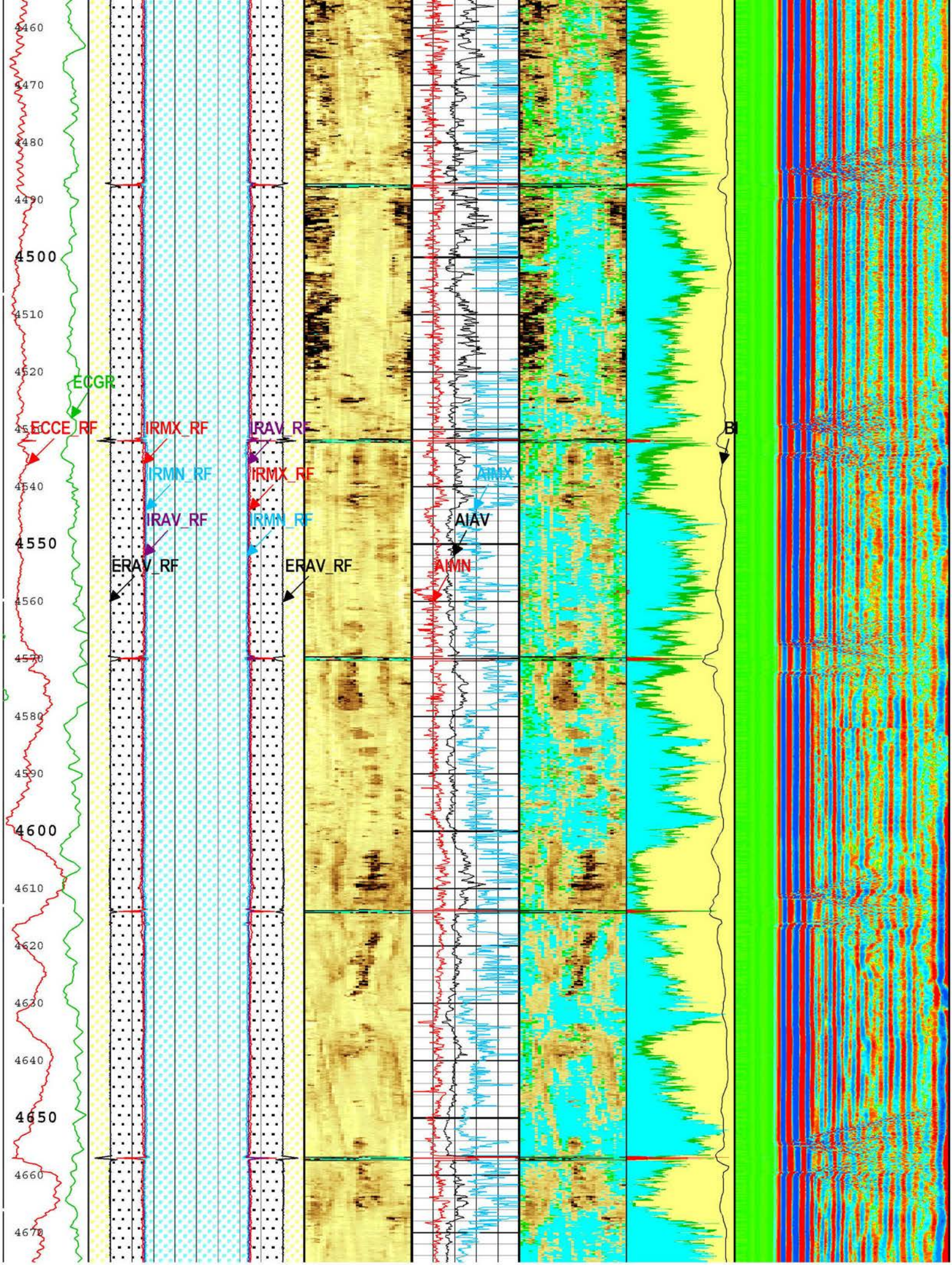
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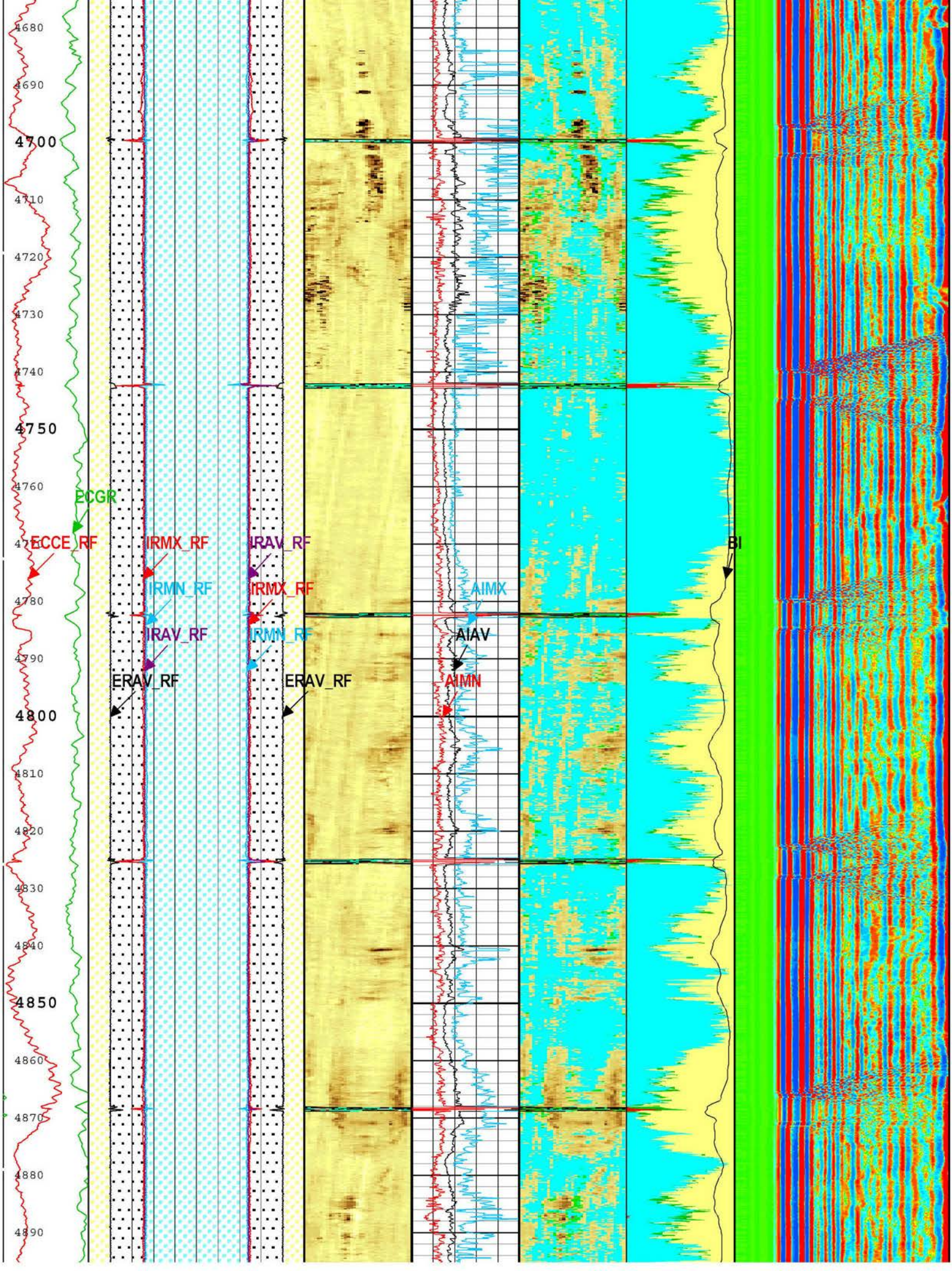
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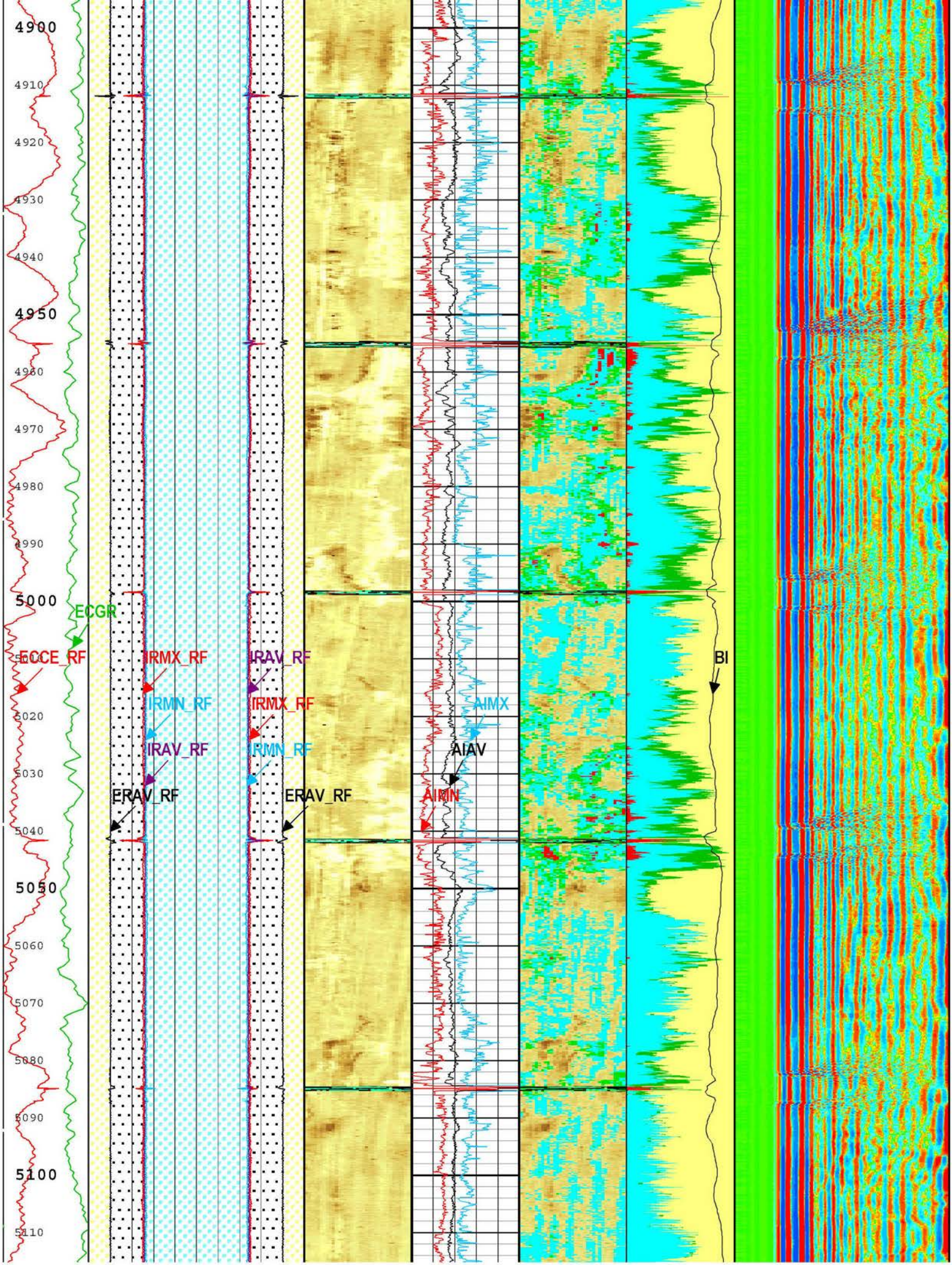
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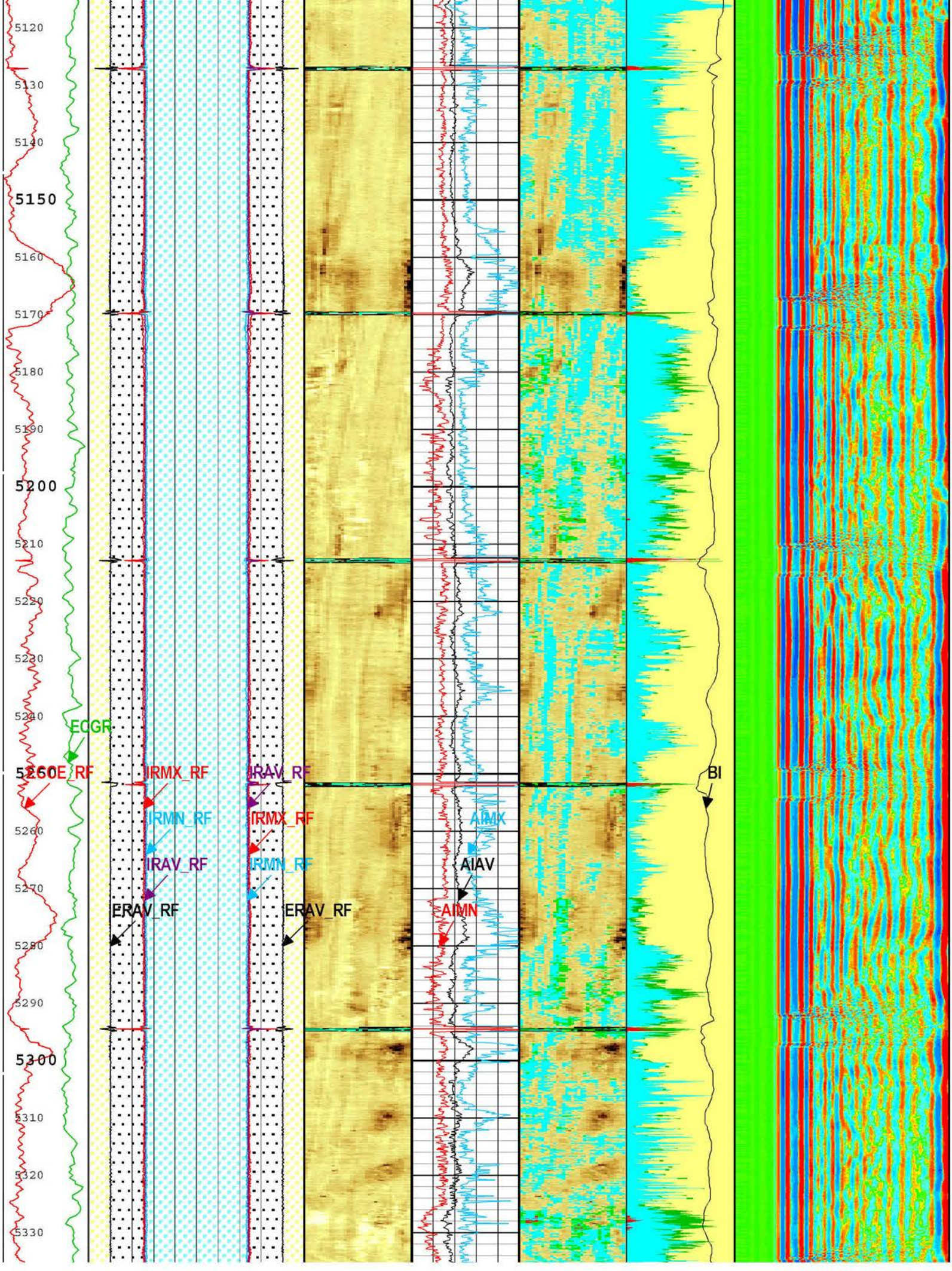
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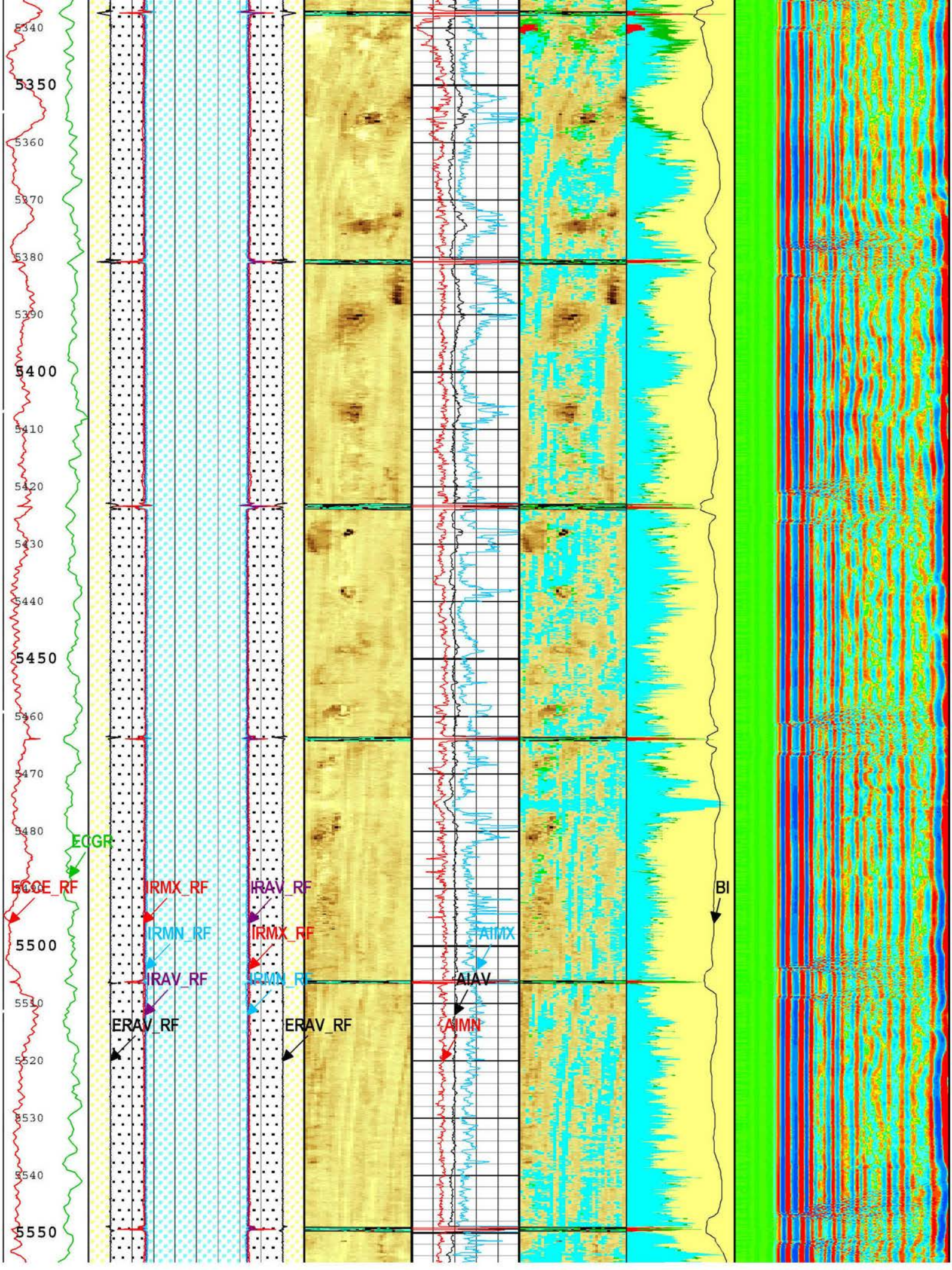
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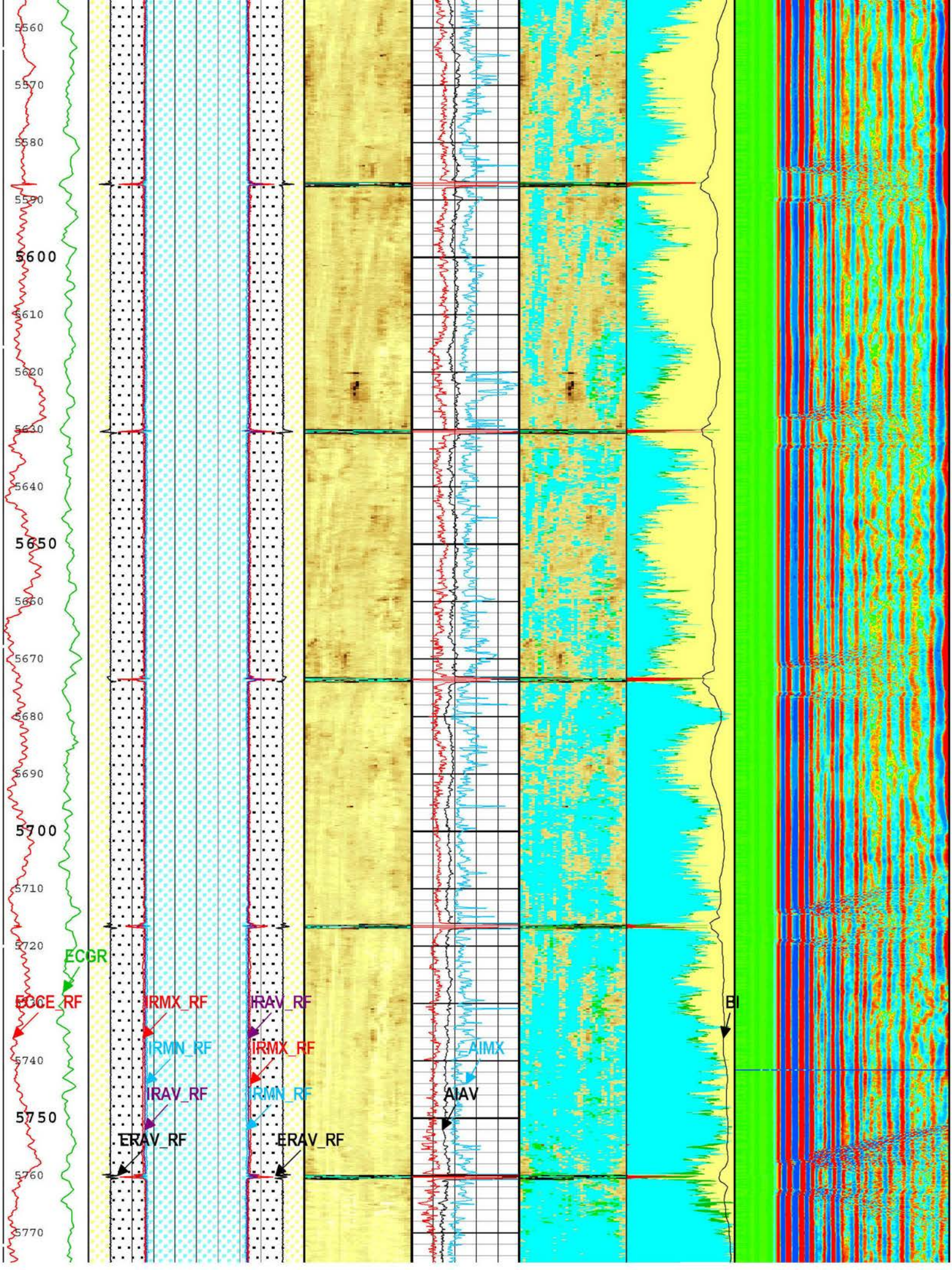
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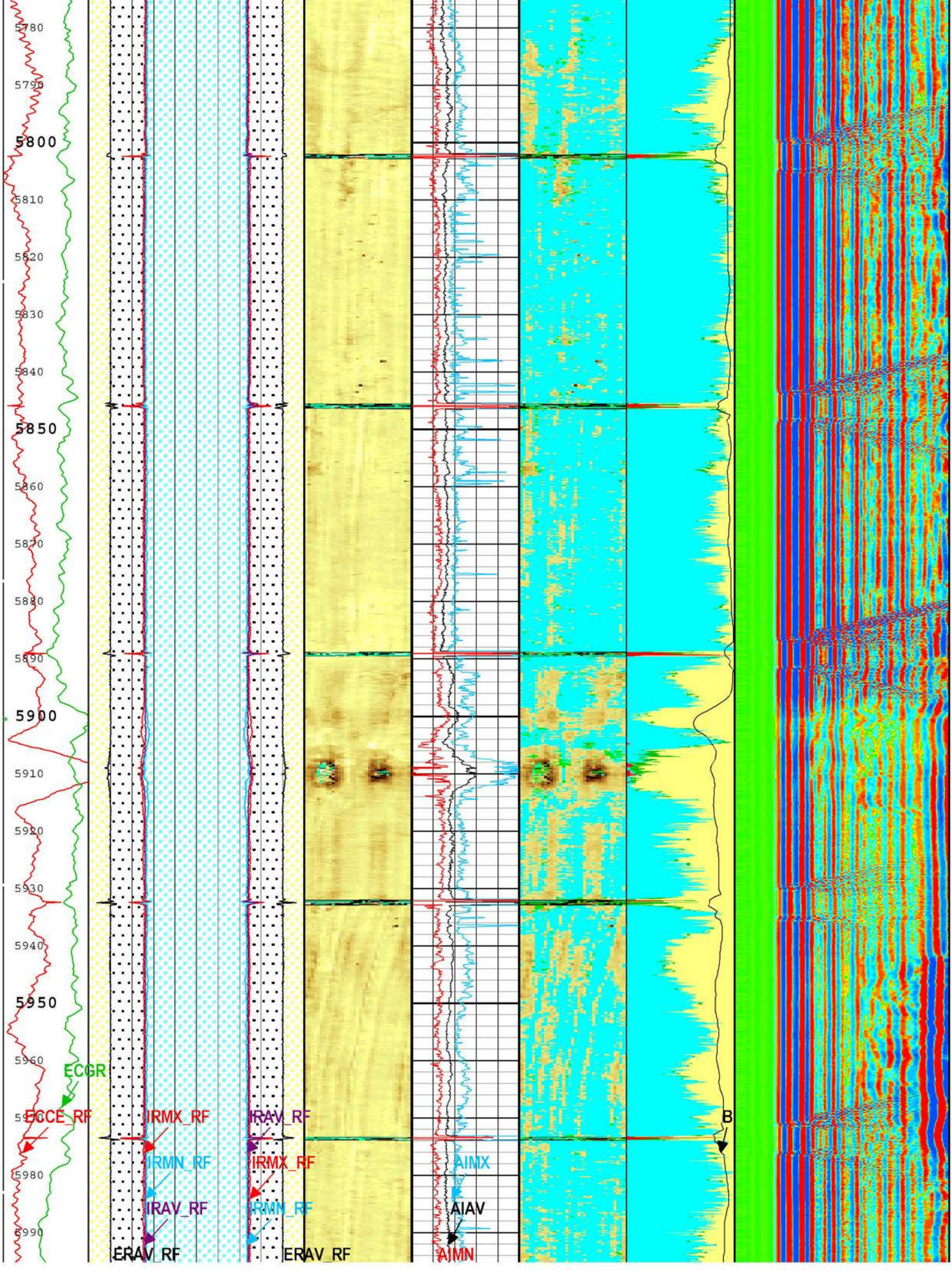
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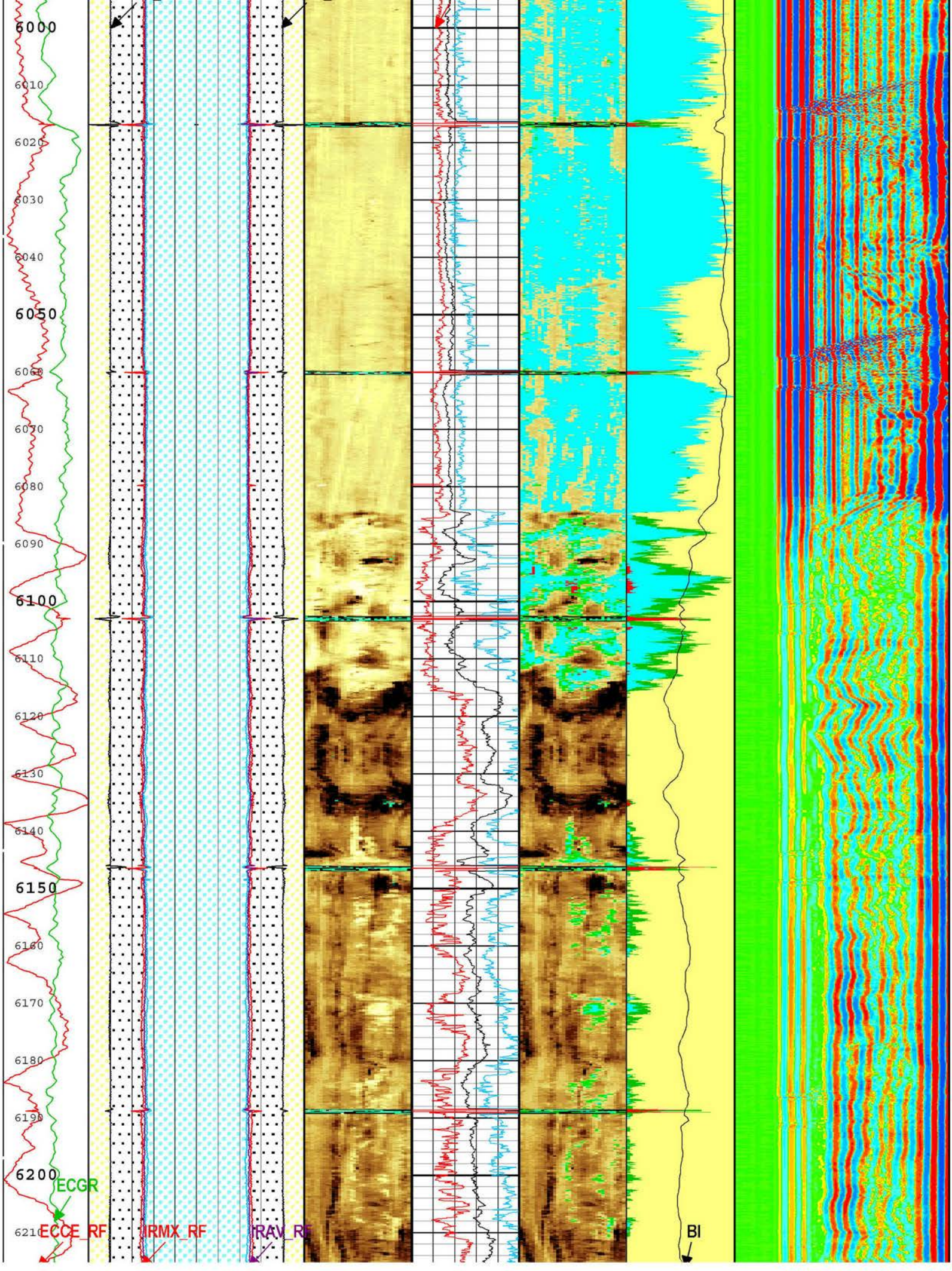
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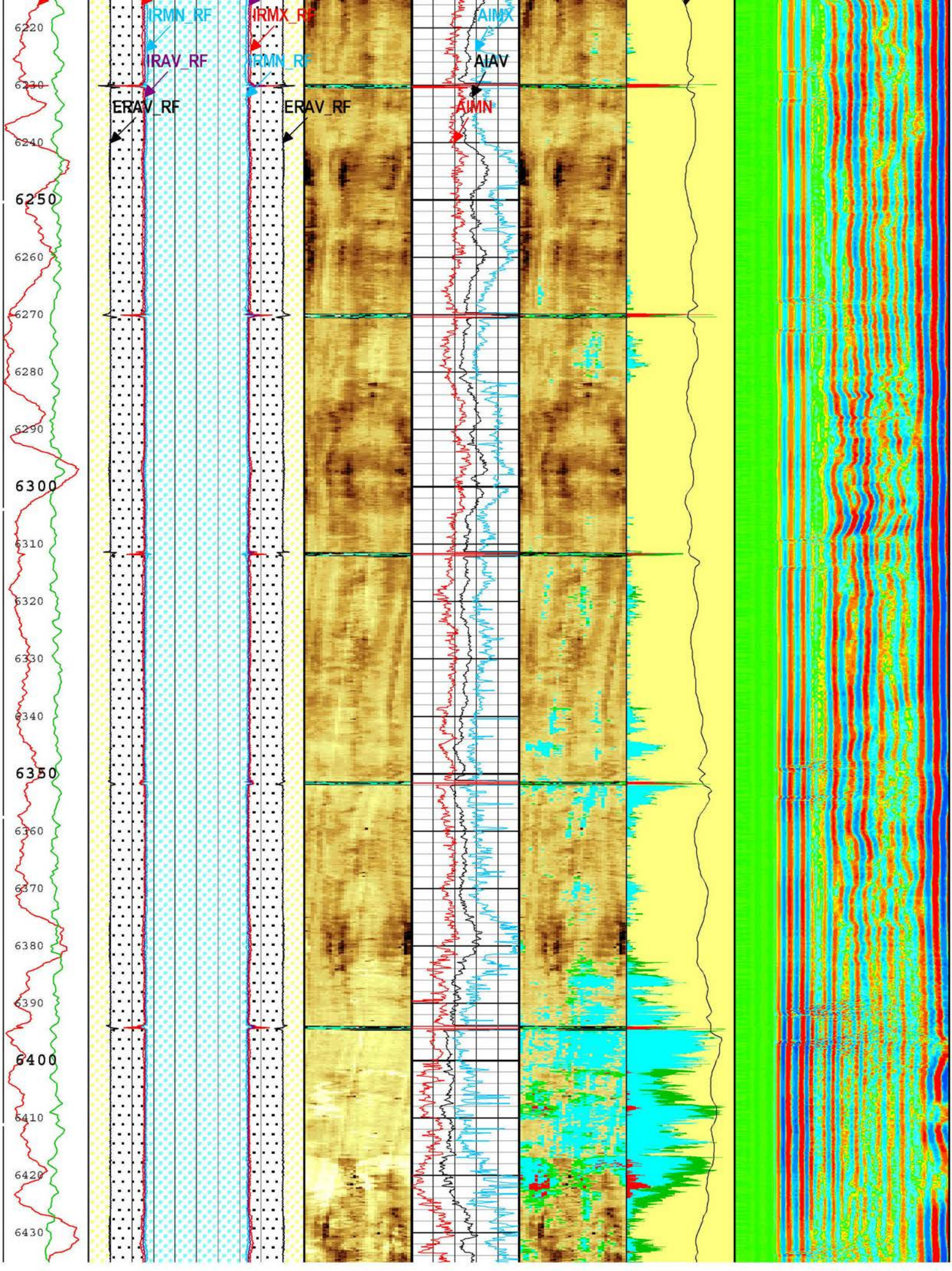
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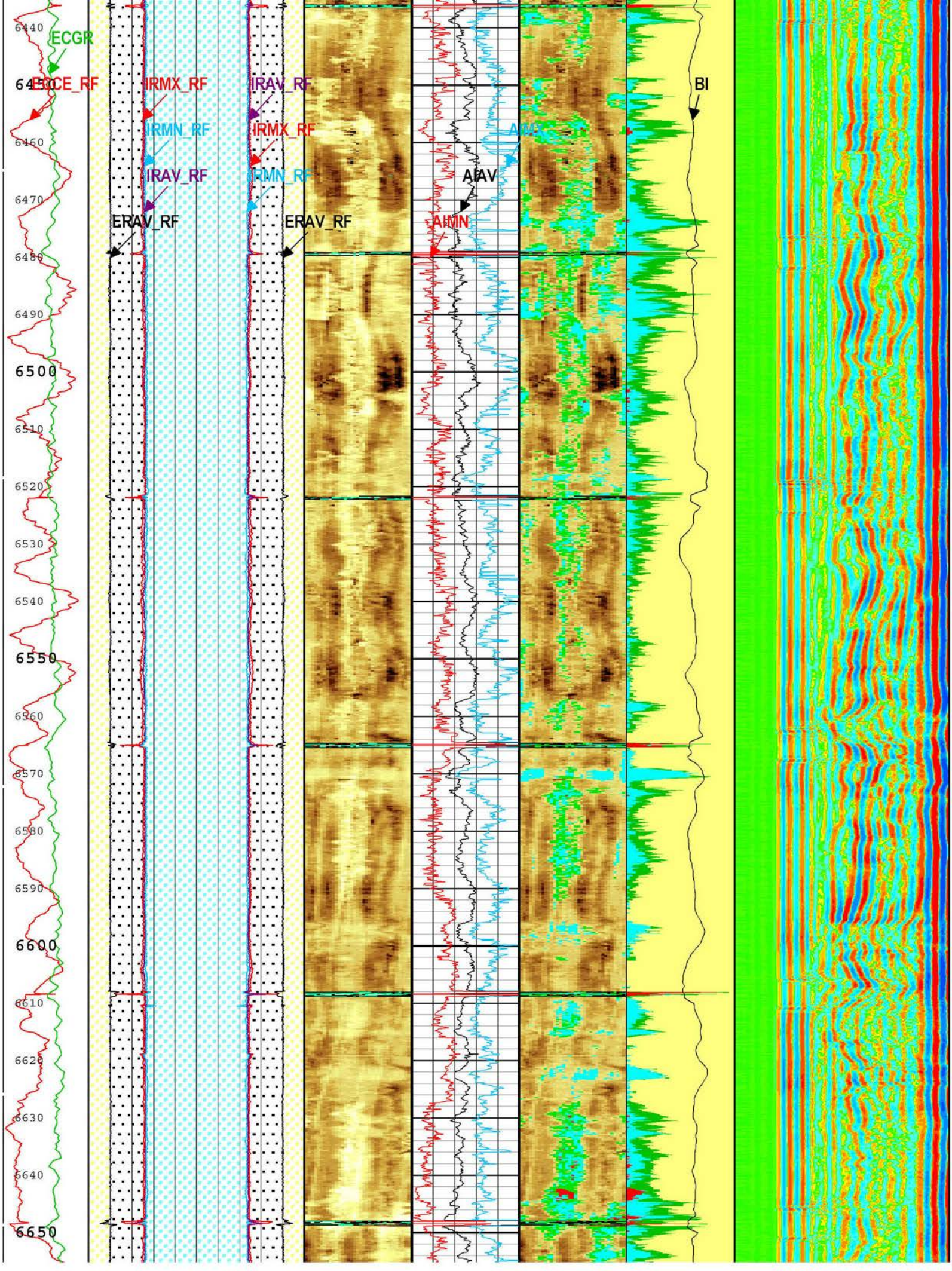
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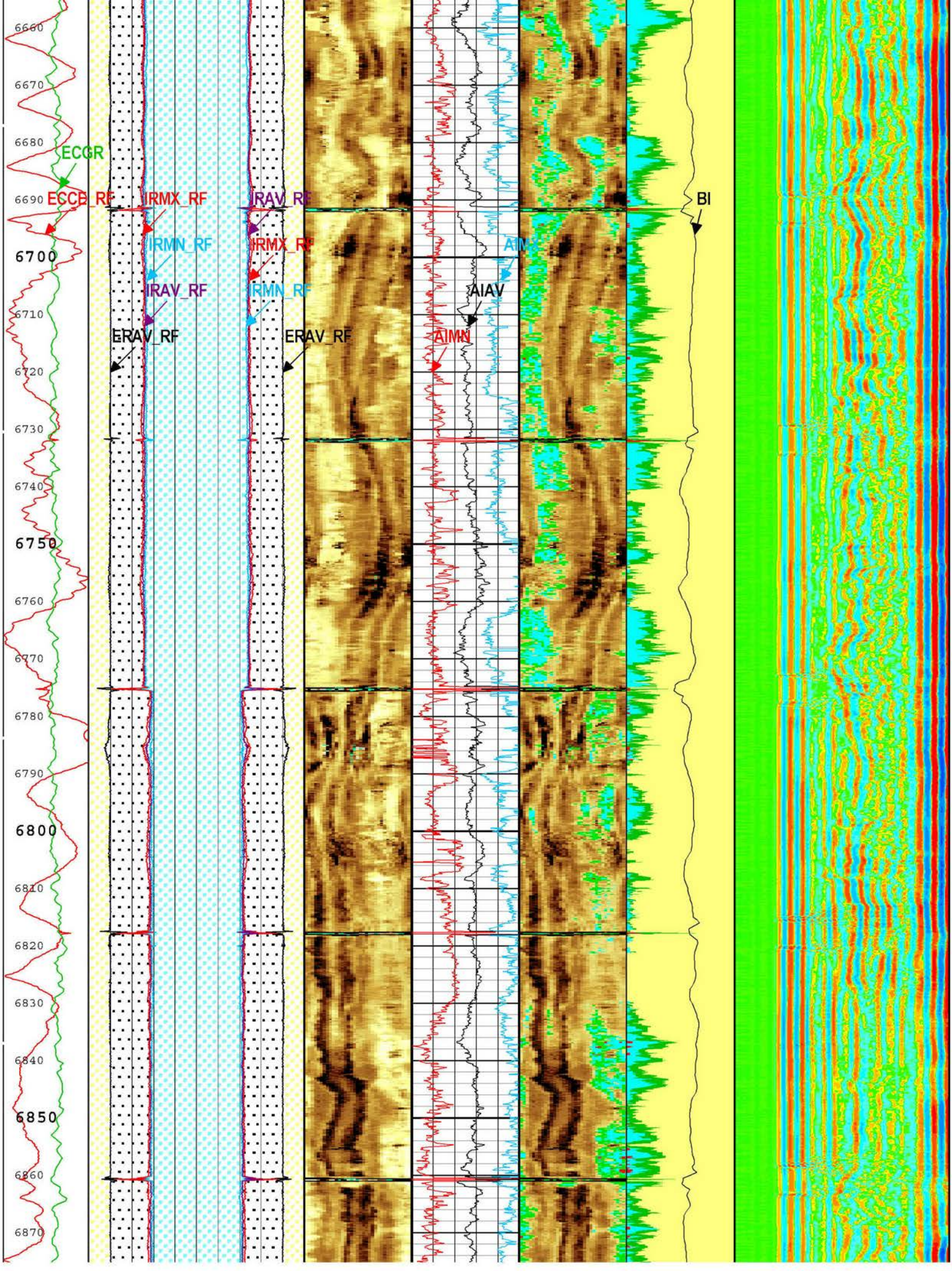
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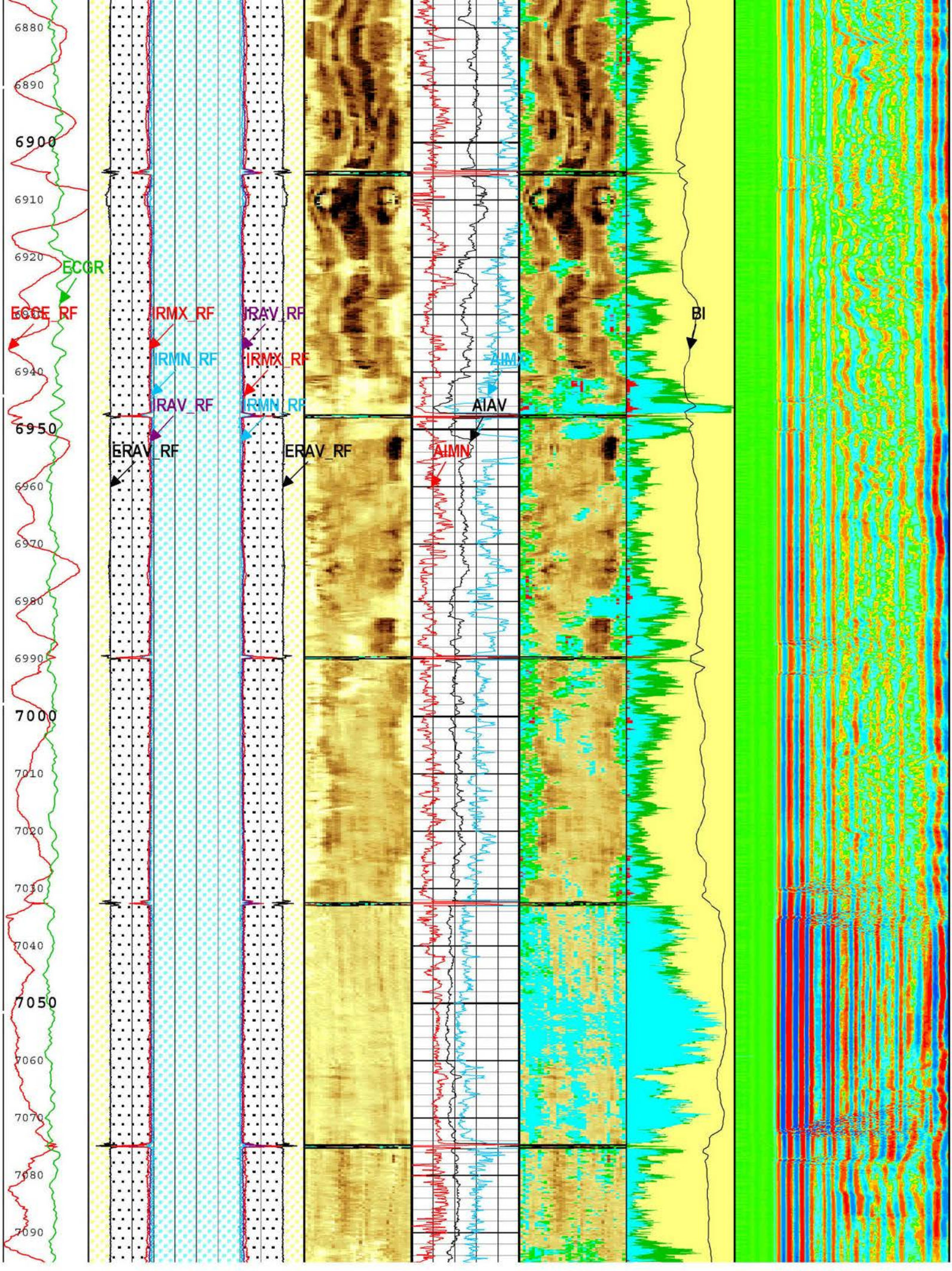
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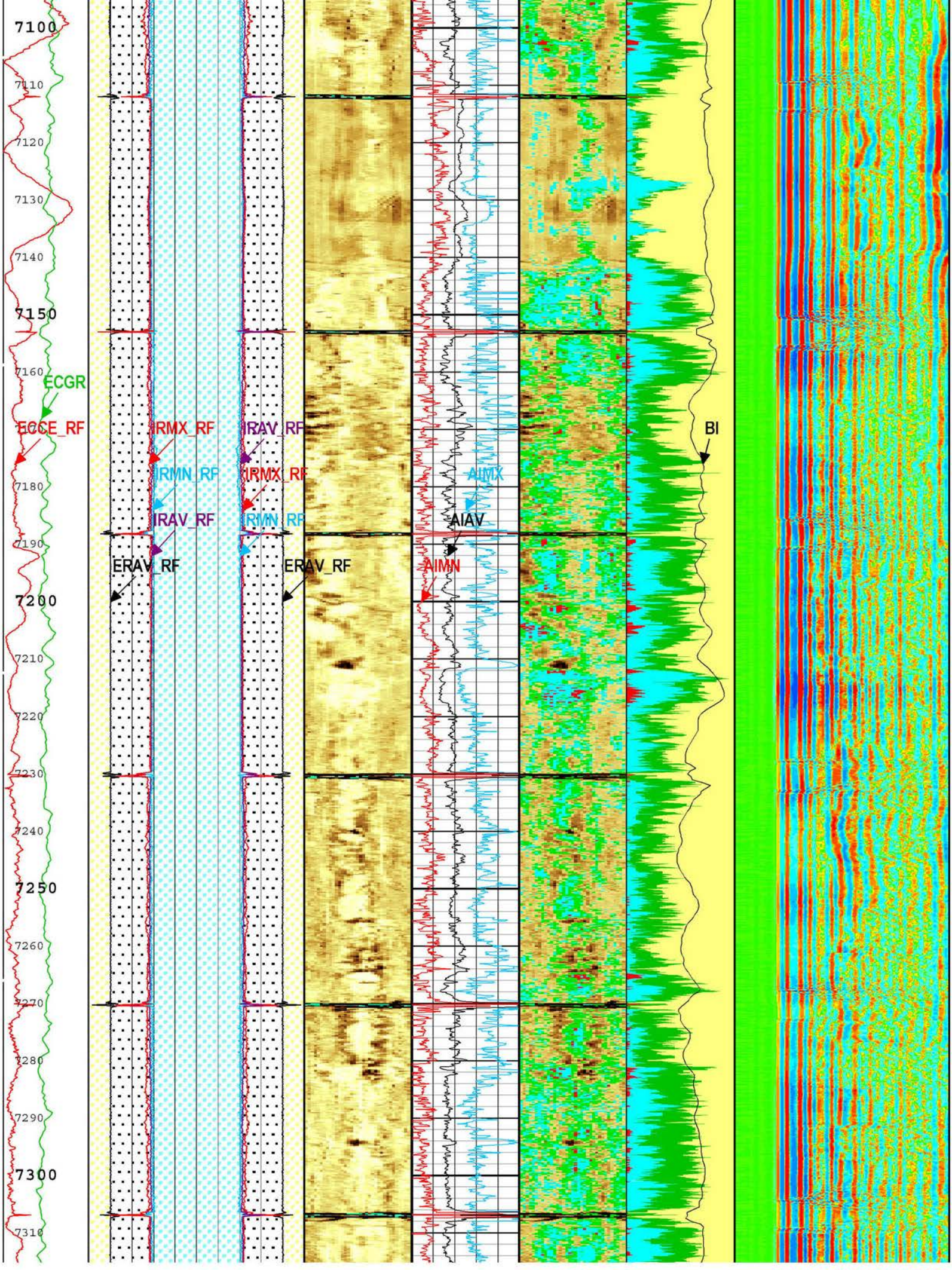
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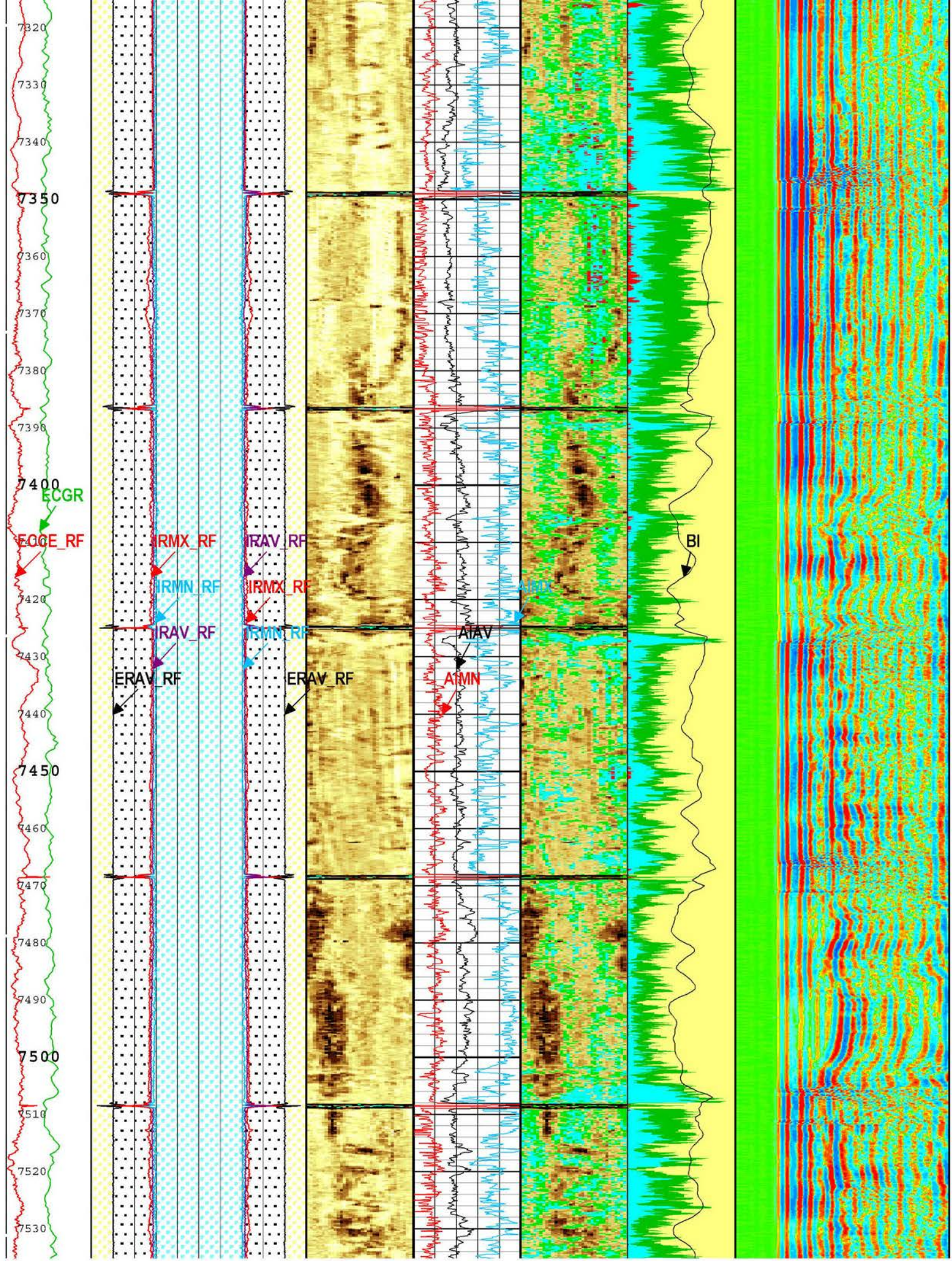
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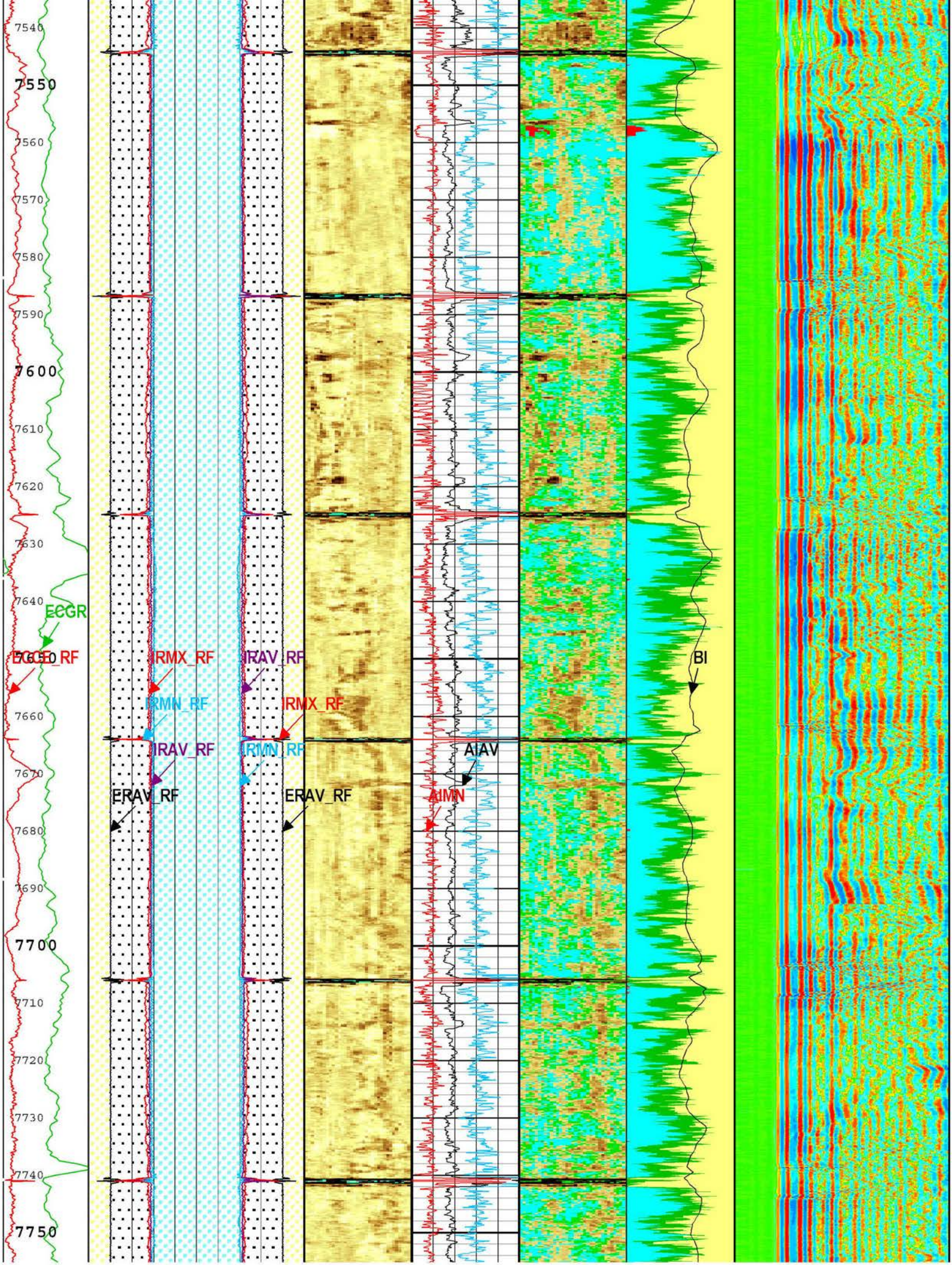
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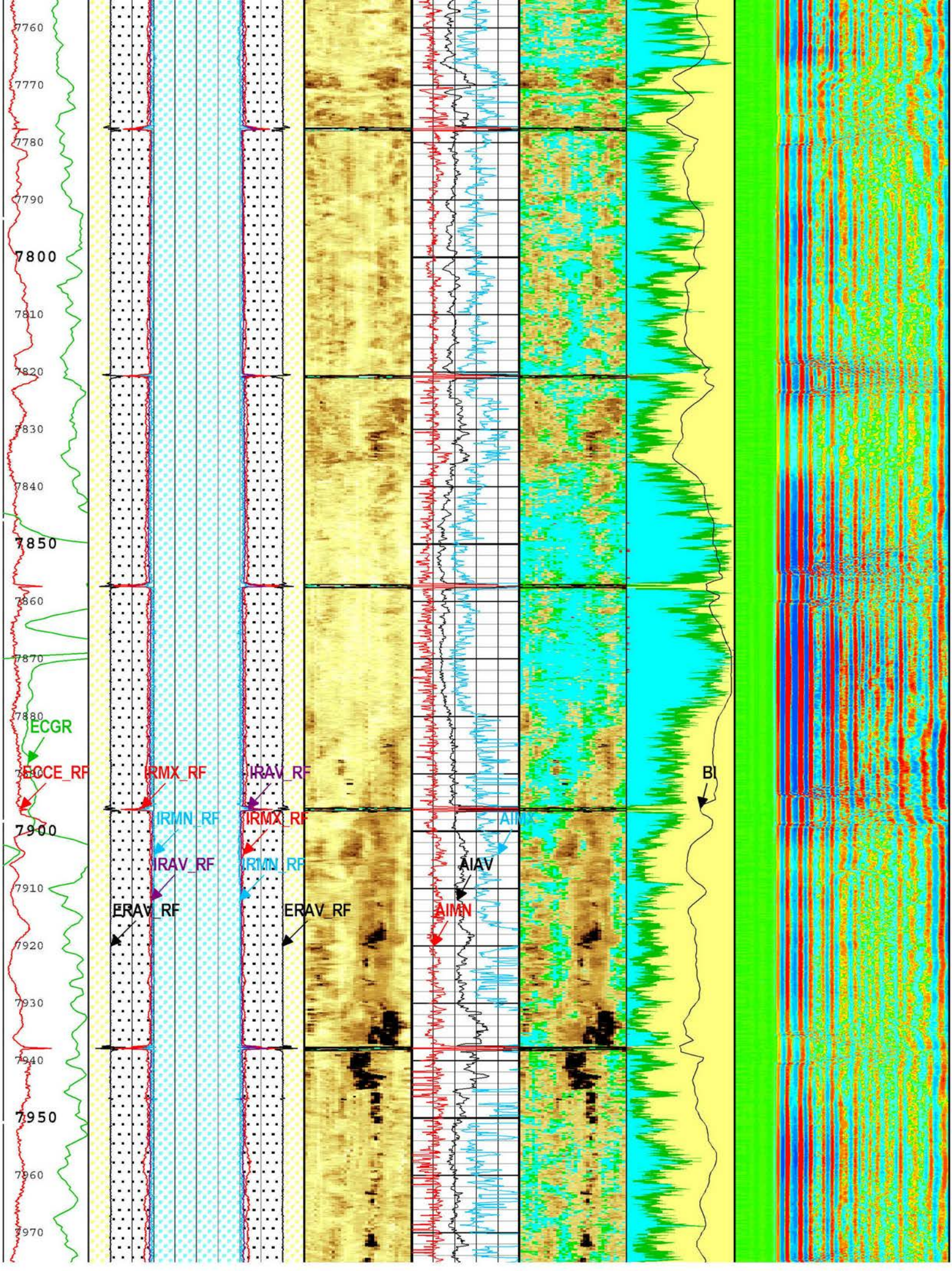
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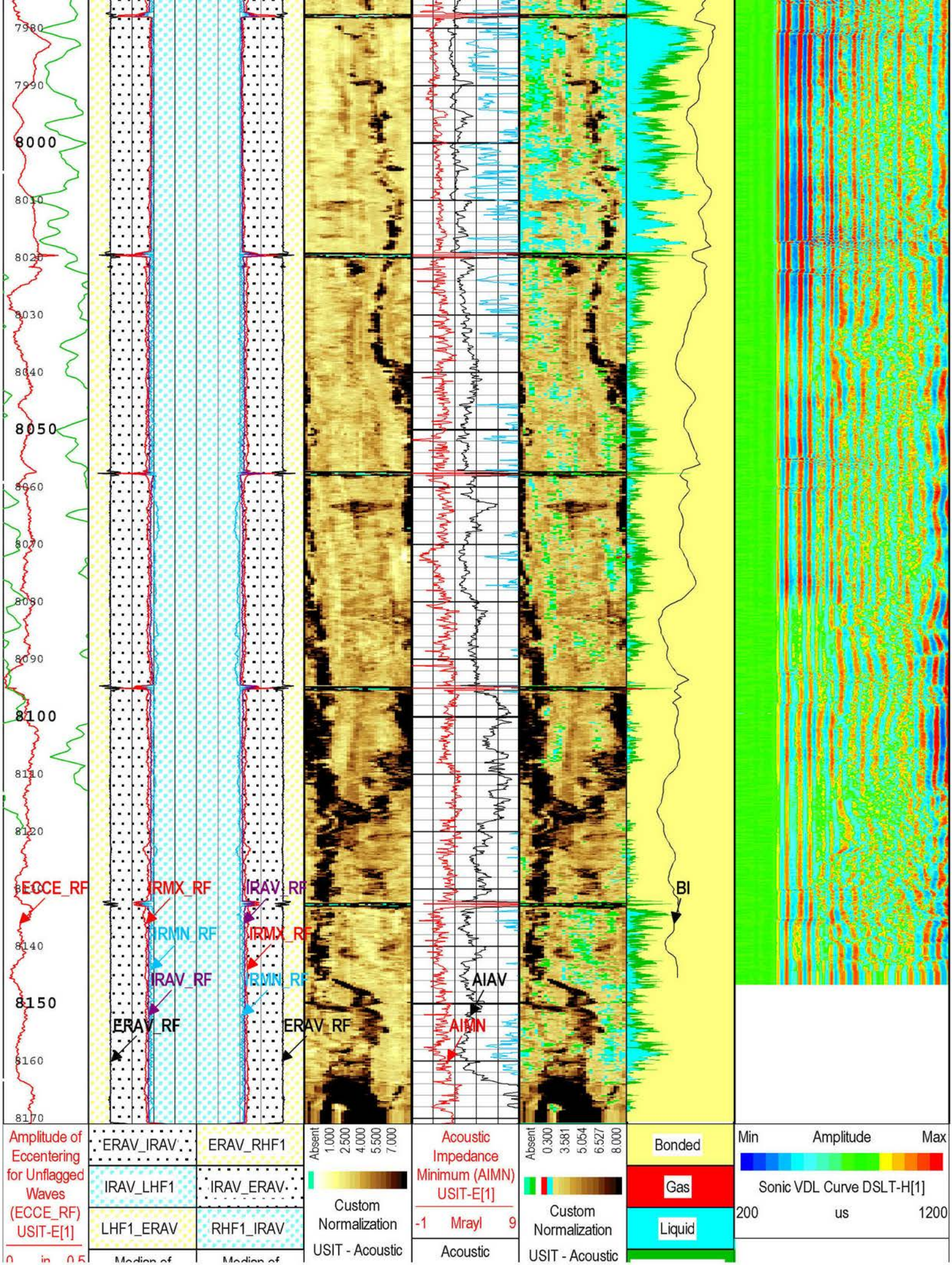
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Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
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IRAV_LHF1
LHF1_ERAV
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IRAV_ERAV
RHF1_IRAV
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Custom Normalization
USIT - Acoustic
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Acoustic
Absent 0.300 3.581 5.054 6.527 8.000
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USIT - Acoustic
Bonded
Gas
Liquid
Min Amplitude Max
Sonic VDL Curve DSLT-H[1]
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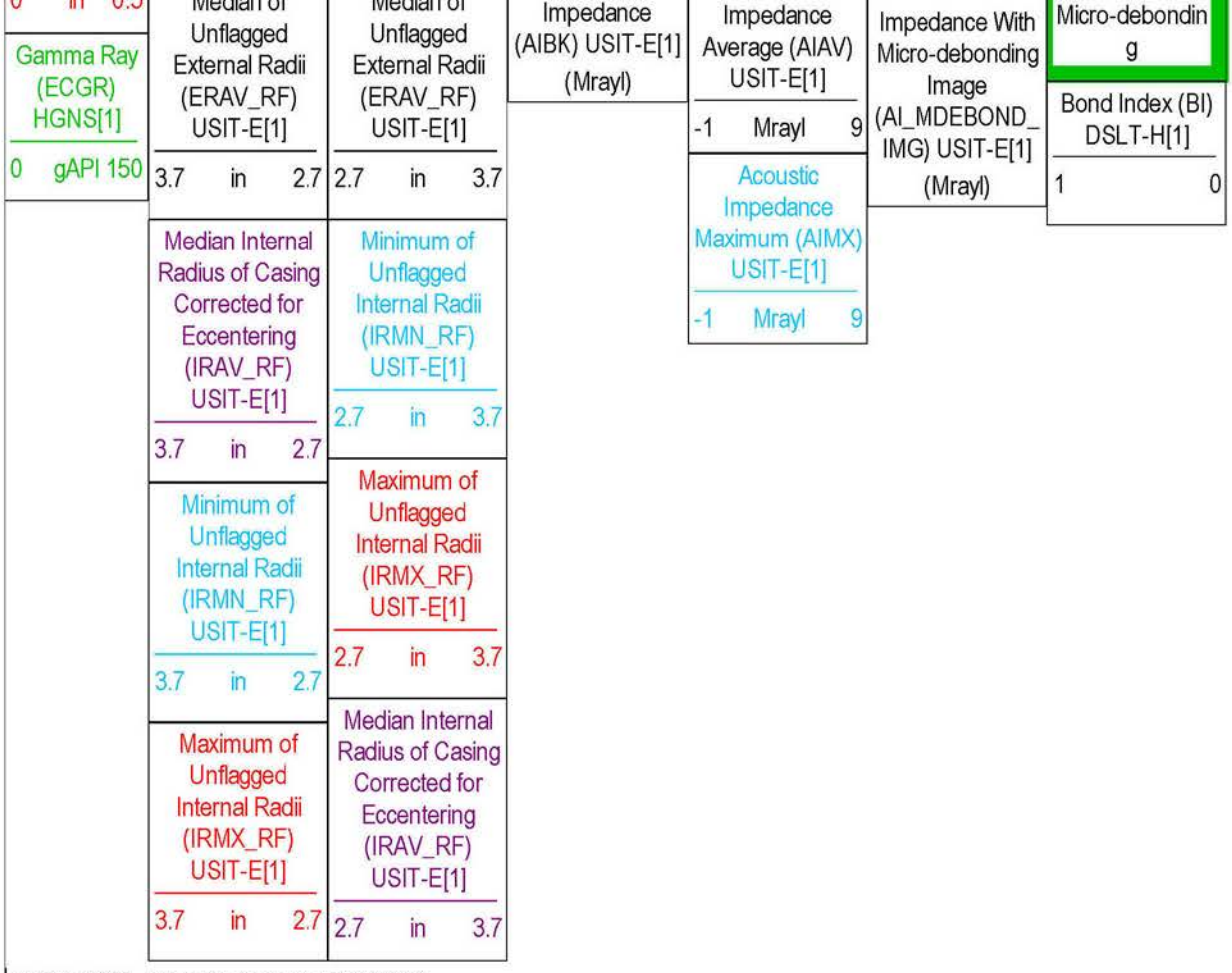


Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 20-Oct-2016 14:28:02

Channel Processing Parameters

Two: Parameters

Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLT-H	140	us
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BILI	Bond Index Level for Zone Isolation	DSLT-H	0.8	
BS	Bit Size	WLSESSION	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLG	CBL Gate Width	DSLT-H	45	us
CBLO	Casing Bottom (Logger)	WLSESSION	8280	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	62	mV
CDEN	Cement Density	HGNS-H	2	g/cm3
CMCF	CBL Cement Type Compensation Factor	DSLT-H	1	
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	Depth Zoned	in
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	0.94	
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	

GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	Depth Zoned	mV
GR_MULTIPLIER	Gamma Ray Multiplier	HGNS-H	1	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	Depth Zoned	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	Depth Zoned	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	Depth Zoned	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	Depth Zoned	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.1	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
NMSG	Near Minimum Sliding Gate	DSLT-H	285	us
NMXG	Near Maximum Sliding Gate	DSLT-H	950	us
NUMP	Number of Detection Passes	DSLT-H	2	
OPLEV	USIT Remove Flagged Data Level	USIT-E	OPT2	
RCOD	Reference Calibrator Outer Diameter	USIT-E	7	in
RCSO	Reference Calibrator Standoff	USIT-E	1.181	in
RCTH	Reference Calibrator Thickness	USIT-E	0.295	in
SDNV	Number of Vertical Samples used for Micro-debonding Computation	USIT-E	5	
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro-debonding	USIT-E	0.5	Mrayl
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro-debonding	USIT-E	0.3	Mrayl
SFAF	Sonic Formation Attenuation Factor	DSLT-H	3.25	dB/ft
SGAD	Sliding Gate Status	DSLT-H	Off	
SGCL	Sliding Gate Closing Delta-T	DSLT-H	130	us/ft
SGCW	Sliding Gate Closing Width	DSLT-H	25	us
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
SGW	Sliding Gate Width	DSLT-H	110	us
SLEV	Signal Level for AGC	DSLT-H	5000	mV
SOCN	Standoff Distance	HGNS-H	0.125	in
SOCO	Standoff Correction Option	HGNS-H	No	
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	Time Zoned	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	Time Zoned	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
VDLG	VDL Manual Gain	DSLT-H	5	
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl

ZCMT	Acoustic Impedance of Cement	DSLT-H	6.8	Mrayl
ZCMT_NEAT	Acoustic Impedance of Cement in Neat Cement	DSLT-H	6.8	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

TwoDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	17.5	0	770
BS	12.25	770	6187
BS	11.75	6187	7421
BS	11	7421	8171
THNO	0.362	0	179
THNO	0.317	179	6774
THNO	0.362	6774	8171
GOBO_CURR	2.87	0	179
GOBO_CURR	1.87	179	6774
GOBO_CURR	2.87	6774	8171
MATT_CURR	11.82	0	179
MATT_CURR	13.39	179	6774
MATT_CURR	11.82	6774	8171
MCI	21.68	0	770
MCI	10	770	8171
MEAS_WLEN	22.5	0	179
MEAS_WLEN	19.62	179	6774
MEAS_WLEN	22.5	6774	8171
MSA	1.33	0	179
MSA	0.78	179	6774
MSA	1.33	6774	8171
MSA_CURR	1.33	0	179
MSA_CURR	0.78	179	6774
MSA_CURR	1.33	6774	8171

All depth are actual.

TwoTime Zoned Parameters

Pass Log[9]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
THDH	125	20-Oct-2016 09:51:44	20-Oct-2016 10:20:40	8171.38	6648.71
THDL	60	20-Oct-2016 09:51:44	20-Oct-2016 10:20:40	8171.38	6648.71

Pass Log[11]:Up

THDH	125	20-Oct-2016 10:26:34	20-Oct-2016 12:34:00	6648.71	113.27
THDL	60	20-Oct-2016 10:24:53	20-Oct-2016 12:00:23	6648.71	1633.75
THDL	70	20-Oct-2016 12:00:23	20-Oct-2016 12:34:00	1633.75	113.27

Pass Log[14]:Up

THDH	130	20-Oct-2016 12:53:24	20-Oct-2016 12:58:23	155.15	5.56
THDL	70	20-Oct-2016 12:53:24	20-Oct-2016 12:58:23	155.15	5.56

All depth are at tool zero.

Tool Control Parameters

Two: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
DDEL	Digitizing Delay	DSLT-H	0	us
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	2.874	in
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
DWCO	Digitizer Word Count	DSLT-H	250	
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	10 deg	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
SDTH	Switch Down Threshold	DSLT-H	20000	
SGAI	Selectable Acquisition Gain	DSLT-H	x1	
SUTH	Switch Up Threshold	DSLT-H	1000	
TMUC	Type of Mud	USIT-E	BRI	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	Time Zoned	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	25	us
WINE	Window End Time	USIT-E	90	us
WMOD	Waveform Firing Mode	DSLT-H	Full	

TwoTime Zoned Parameters

Pass Log[9]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	50	20-Oct-2016 09:51:44	20-Oct-2016 10:20:40	8171.38	6648.71

Pass Log[11]:Up

EMXV	60	20-Oct-2016 10:24:53	20-Oct-2016 11:05:14	6648.71	4600.07
EMXV	65	20-Oct-2016 11:05:14	20-Oct-2016 12:34:00	4600.07	113.27

Pass Log[14]:Up

EMXV	100	20-Oct-2016 12:53:24	20-Oct-2016 12:54:59	155.15	76.32
EMXV	110	20-Oct-2016 12:54:59	20-Oct-2016 12:57:44	76.32	16.88
EMXV	125	20-Oct-2016 12:57:44	20-Oct-2016 12:58:23	16.88	5.56

All depth are at tool zero.

Composite 1

Main Pass 5 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Two	Log[9]:Up	Up	6640.29 ft	8171.85 ft	20-Oct-2016 9:51:39 AM	20-Oct-2016 10:20:40 AM	ON	1.47 ft	No
Two	Log[11]:Up	Up	36.69 ft	6737.51 ft	20-Oct-2016 10:24:53 AM	20-Oct-2016 12:34:00 PM	ON	1.35 ft	No
Two	Log[14]:Up	Up	5.56 ft	155.15 ft	20-Oct-2016 12:53:24 PM	20-Oct-2016 12:58:23 PM	ON	1.96 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Frew 4

Composite 1:S008

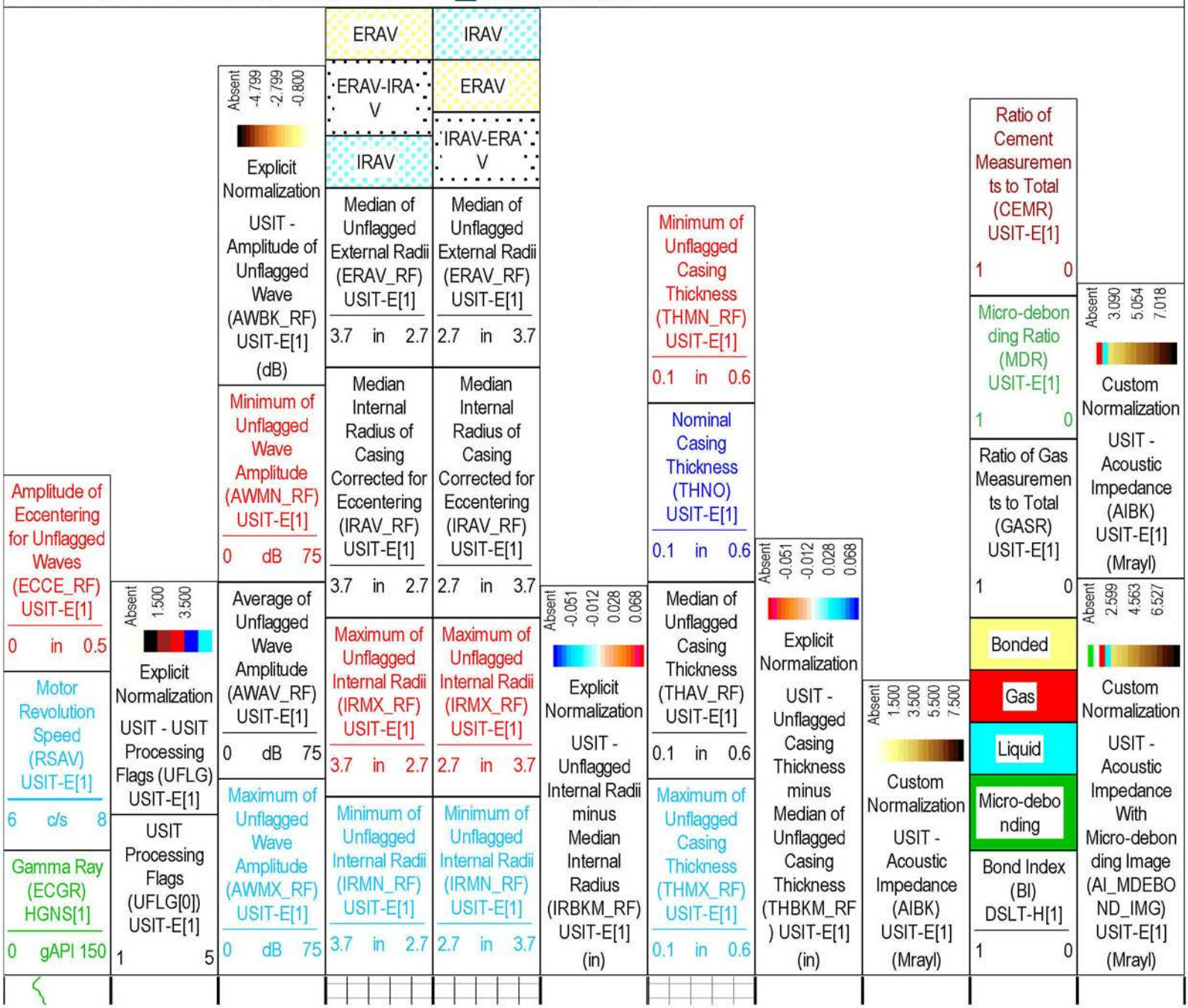
Description: USI Composite Format: Log (LBV1_USI Composite 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Oct-2016 14:28:19

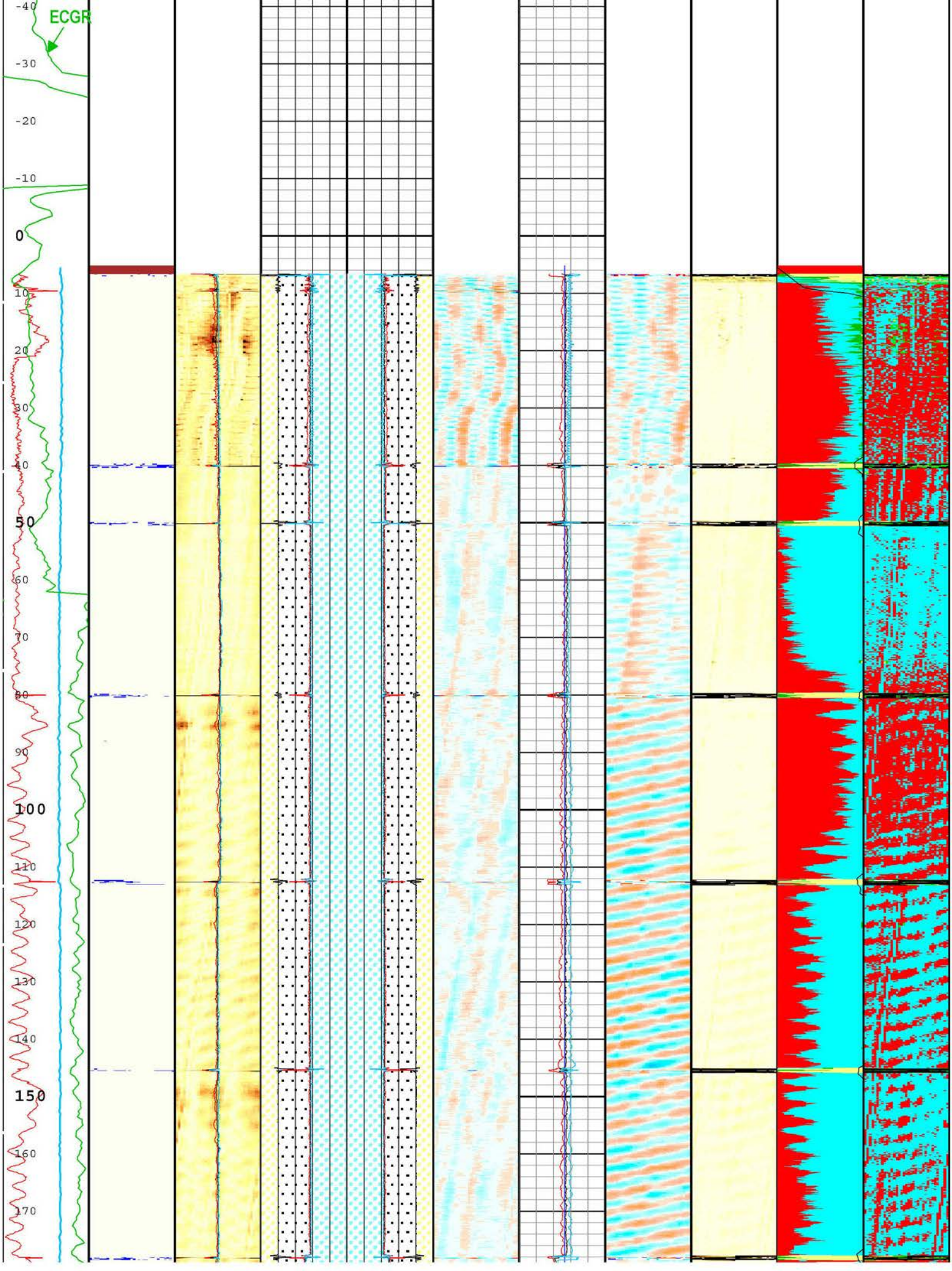
TIME_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E[1]

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

UTIM Error
Pulse Origin Not Detected
WINLEN Error
Casing Thickness Error
Loop Processing Error

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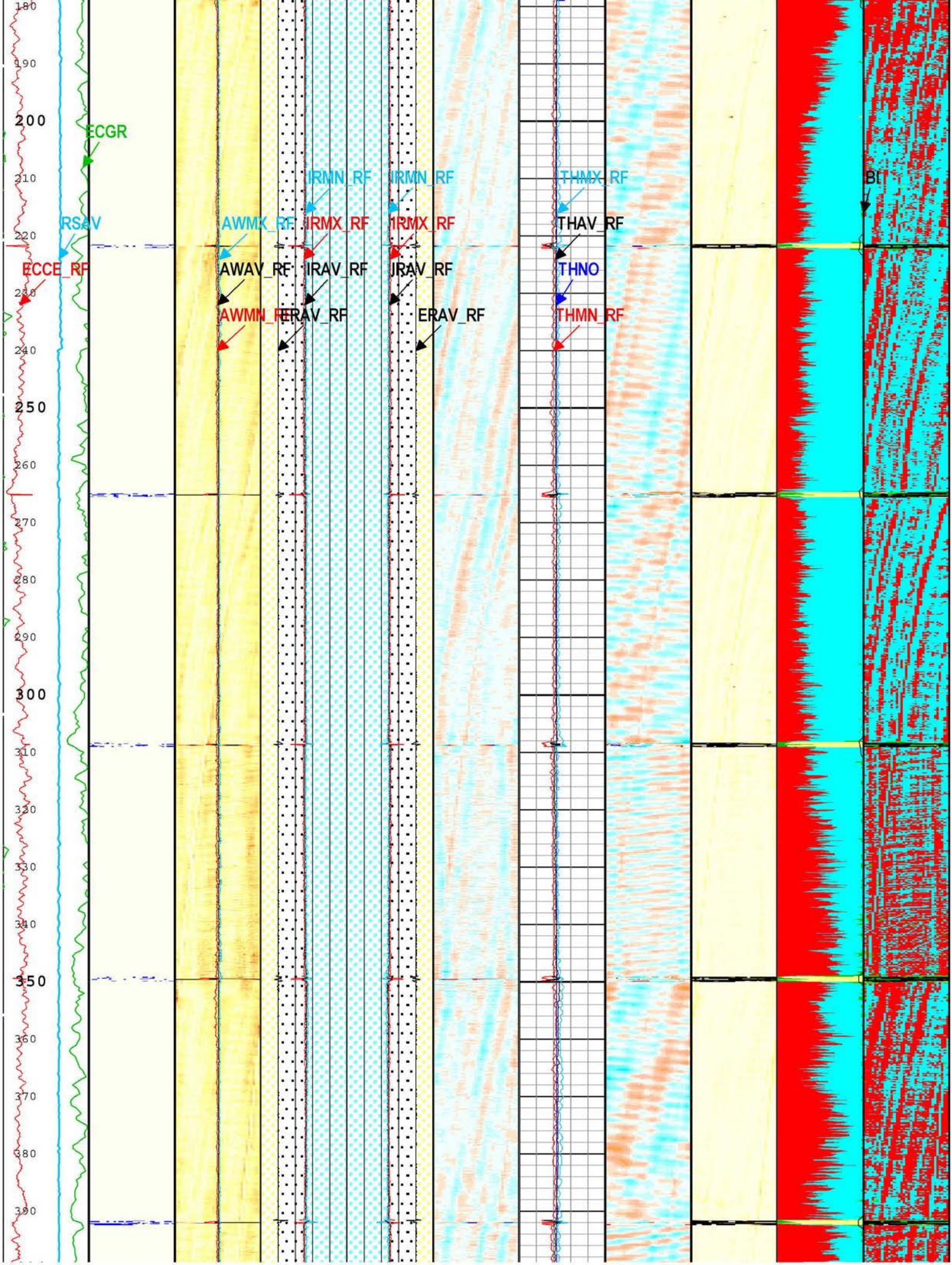
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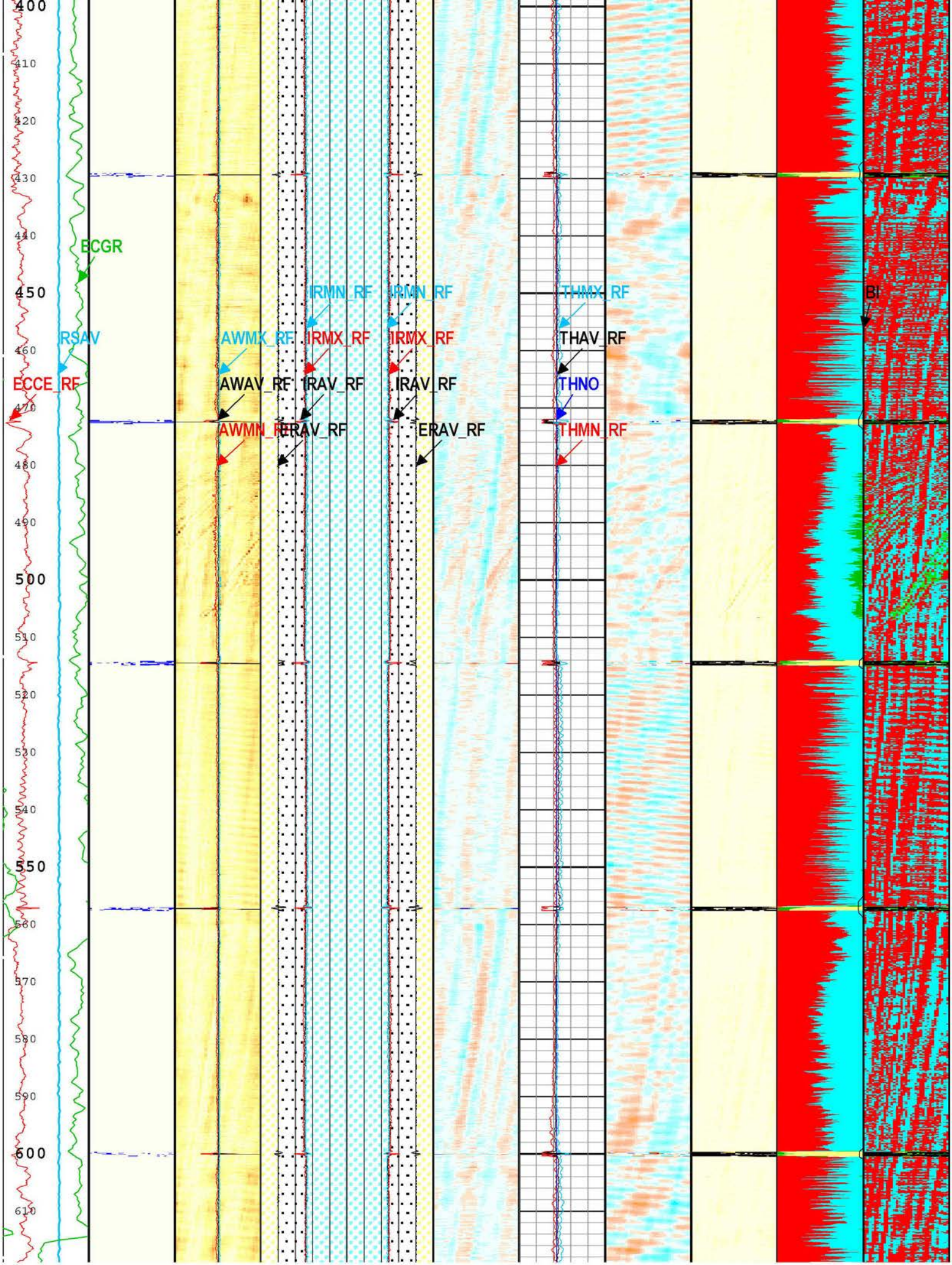
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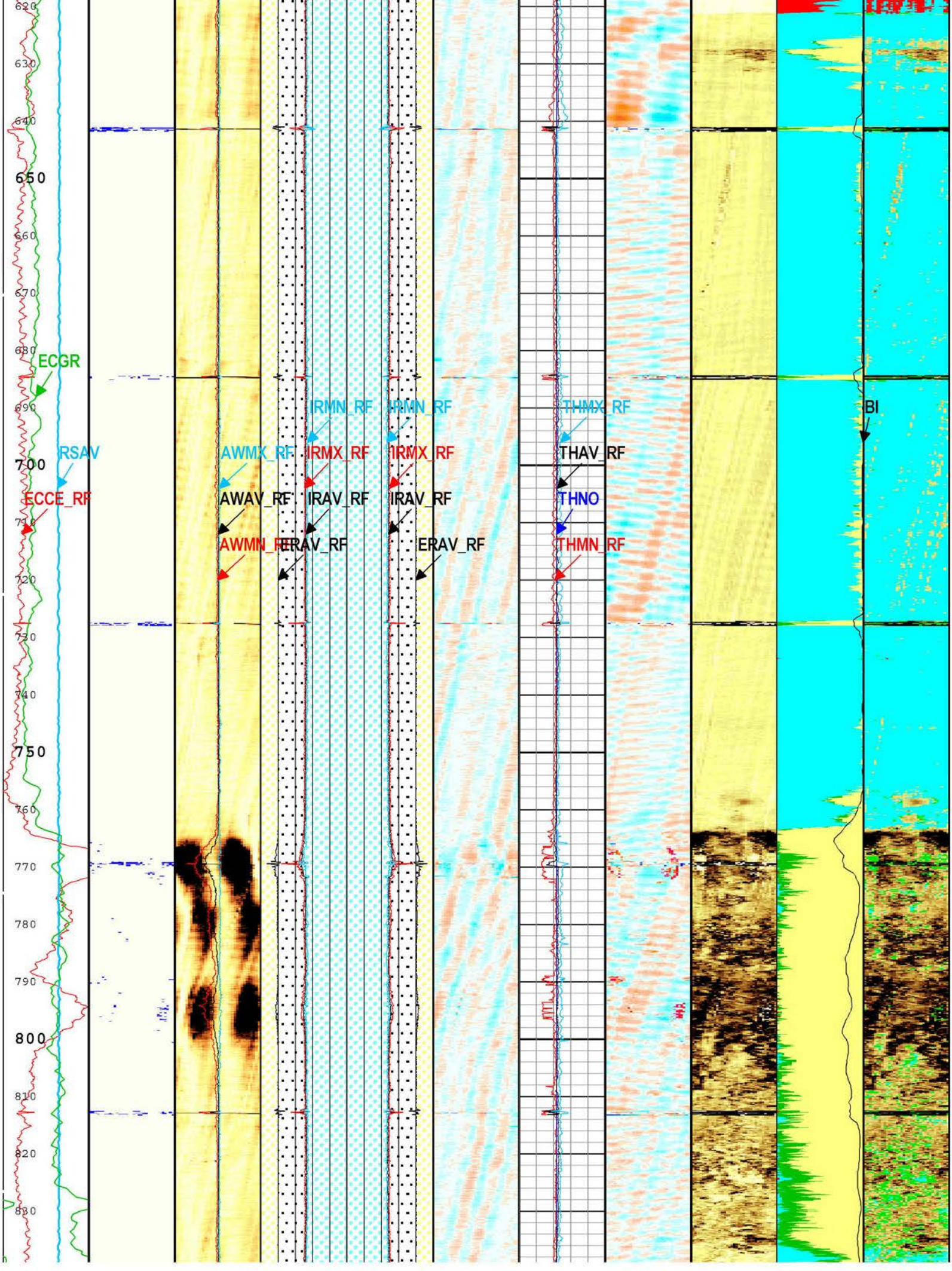
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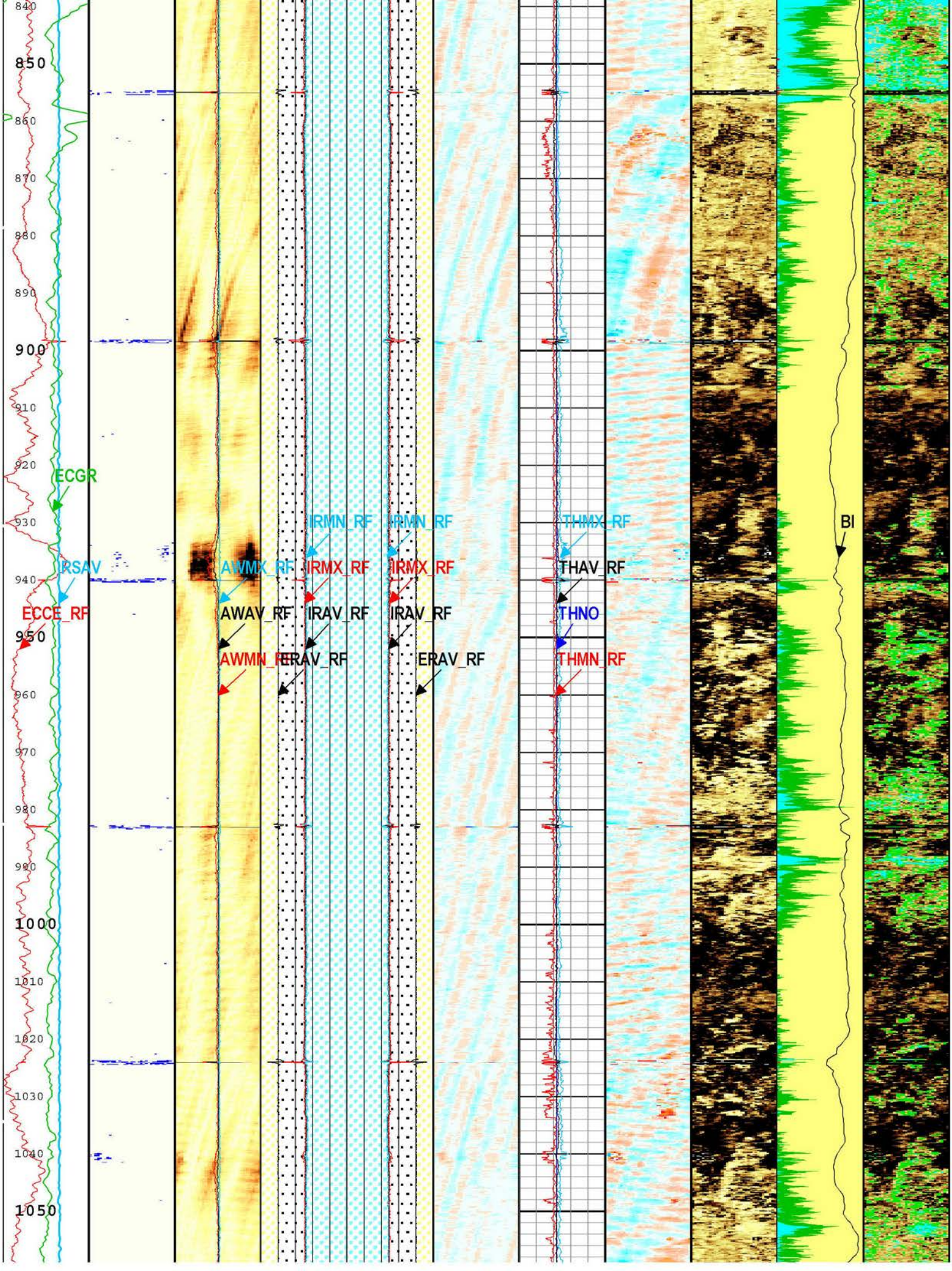
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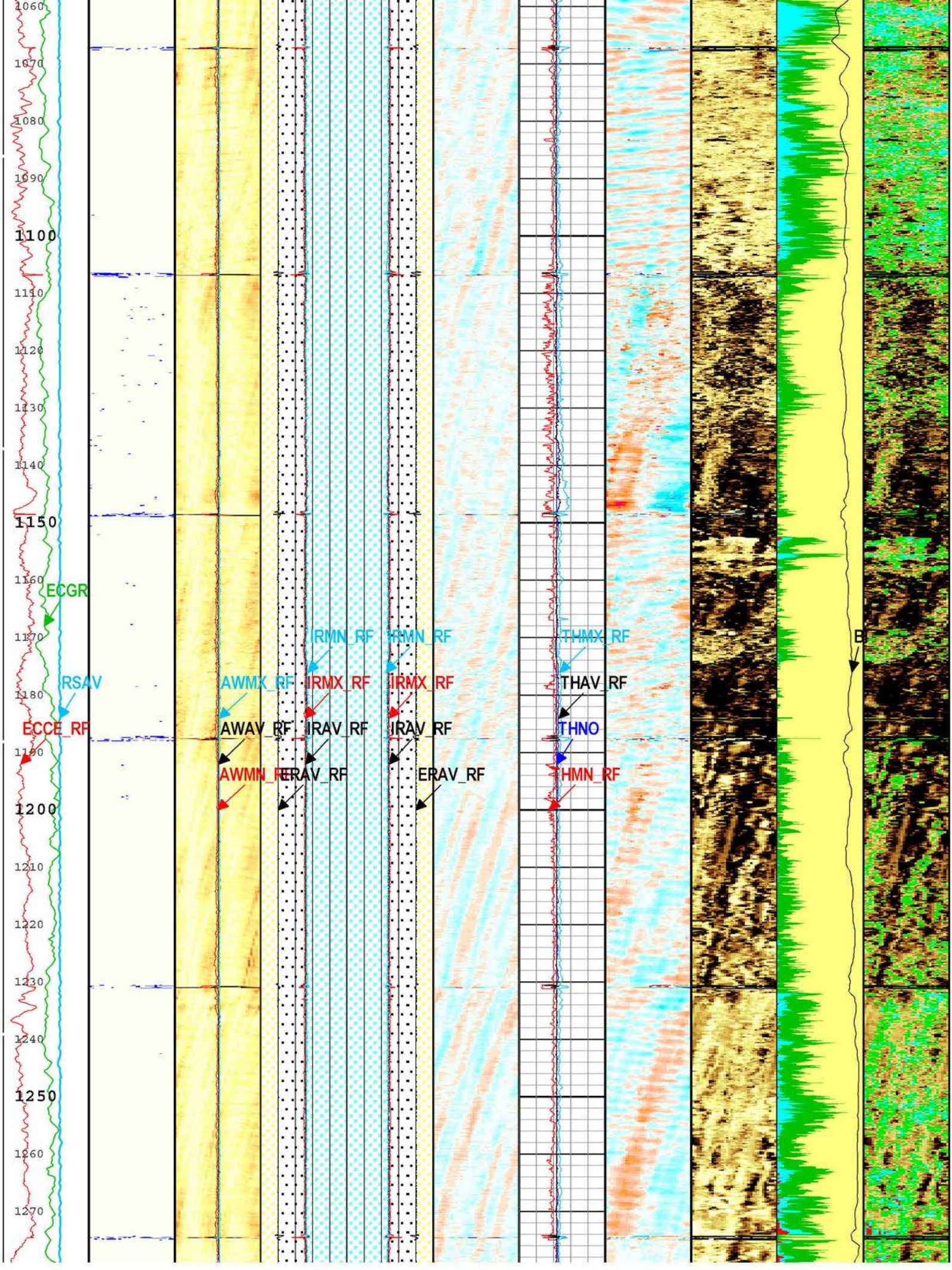
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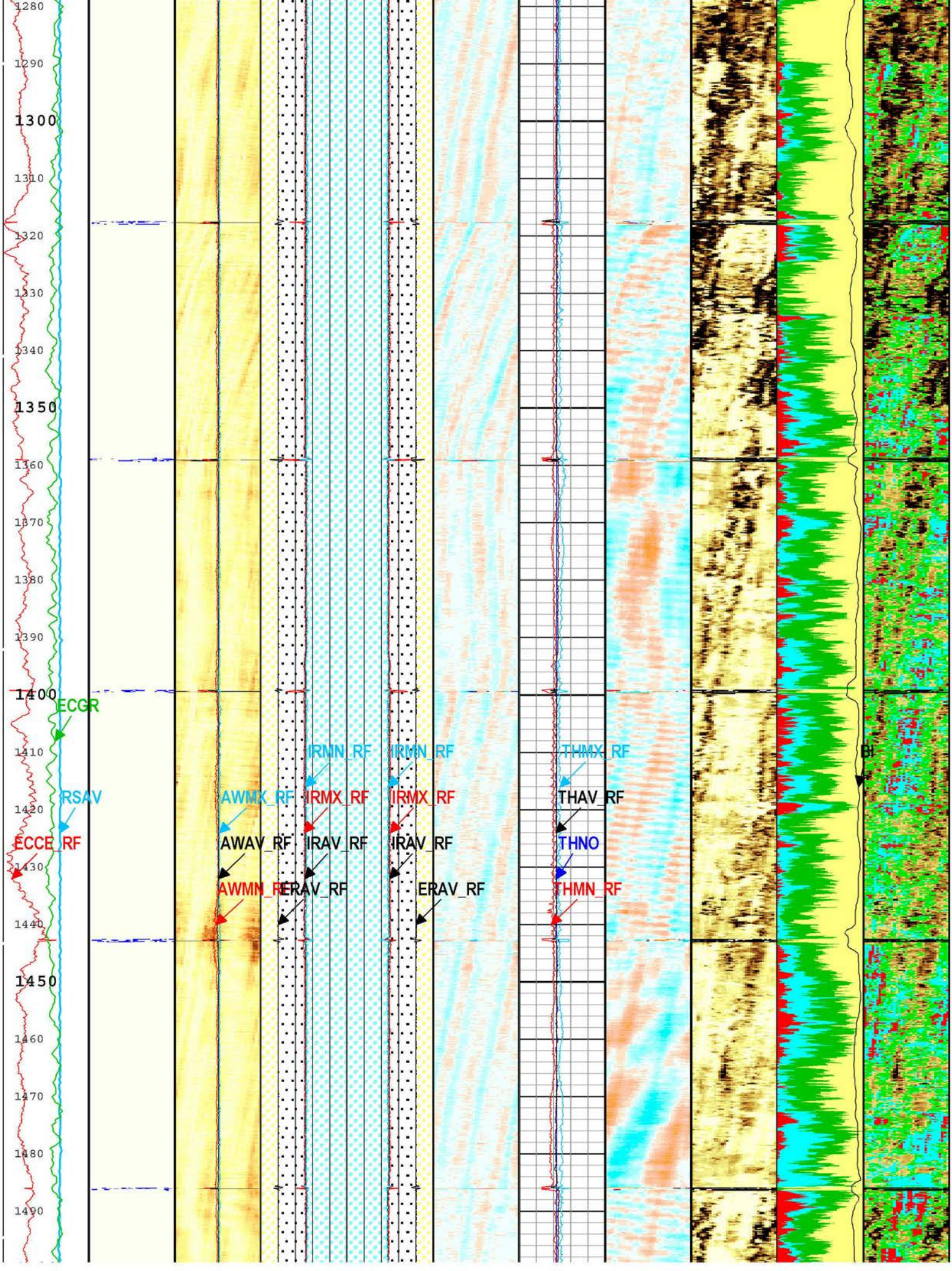
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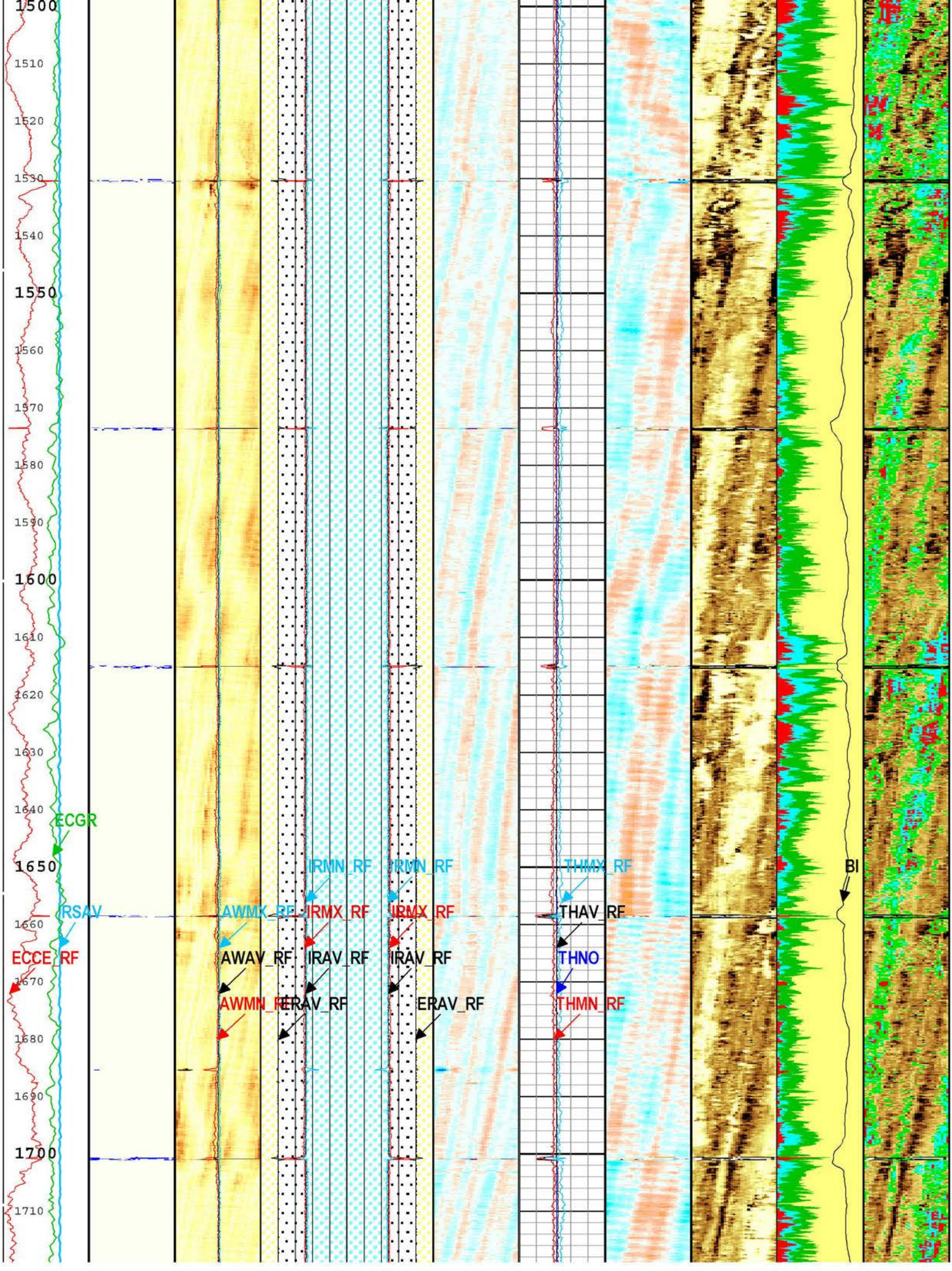
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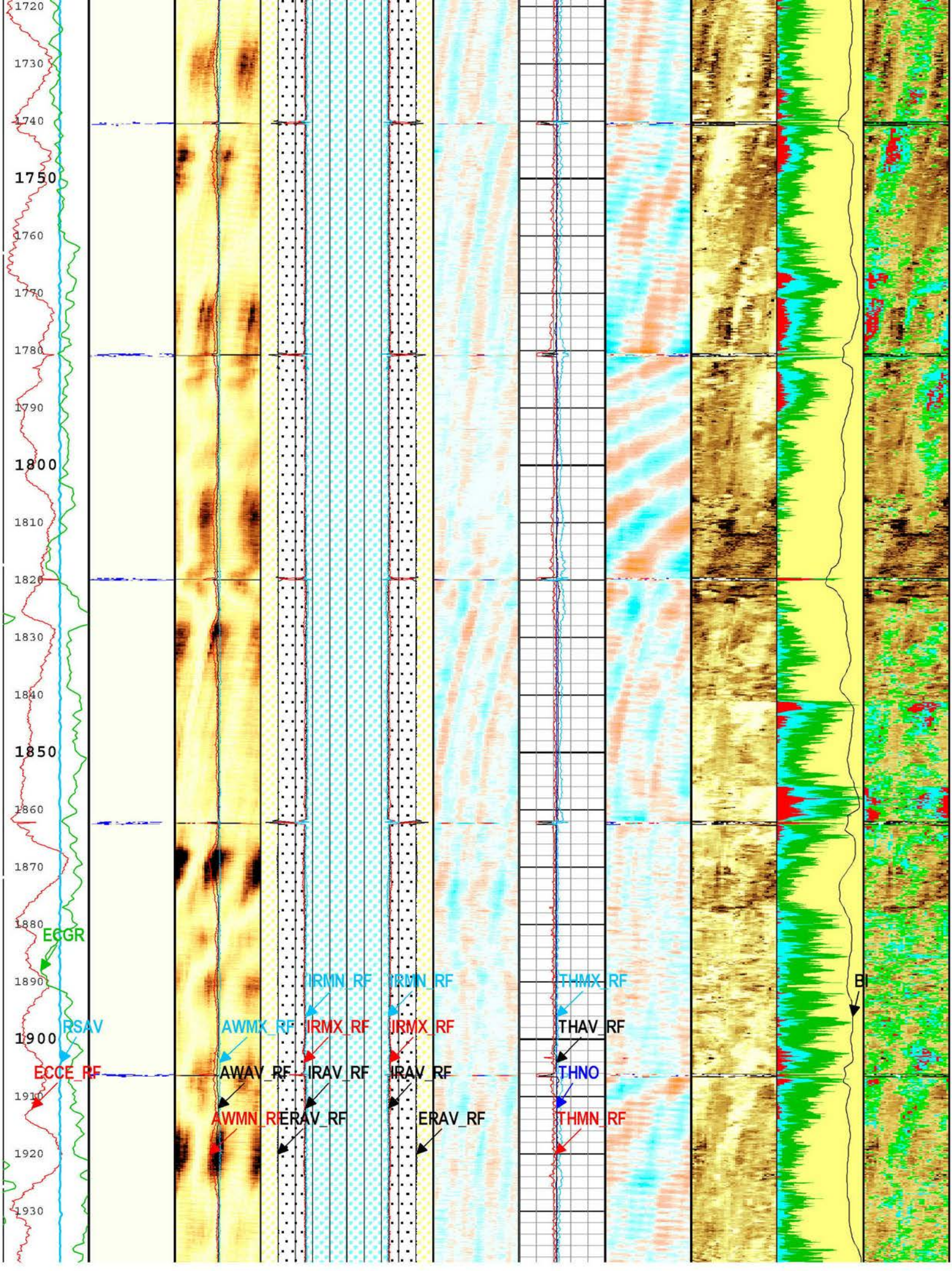
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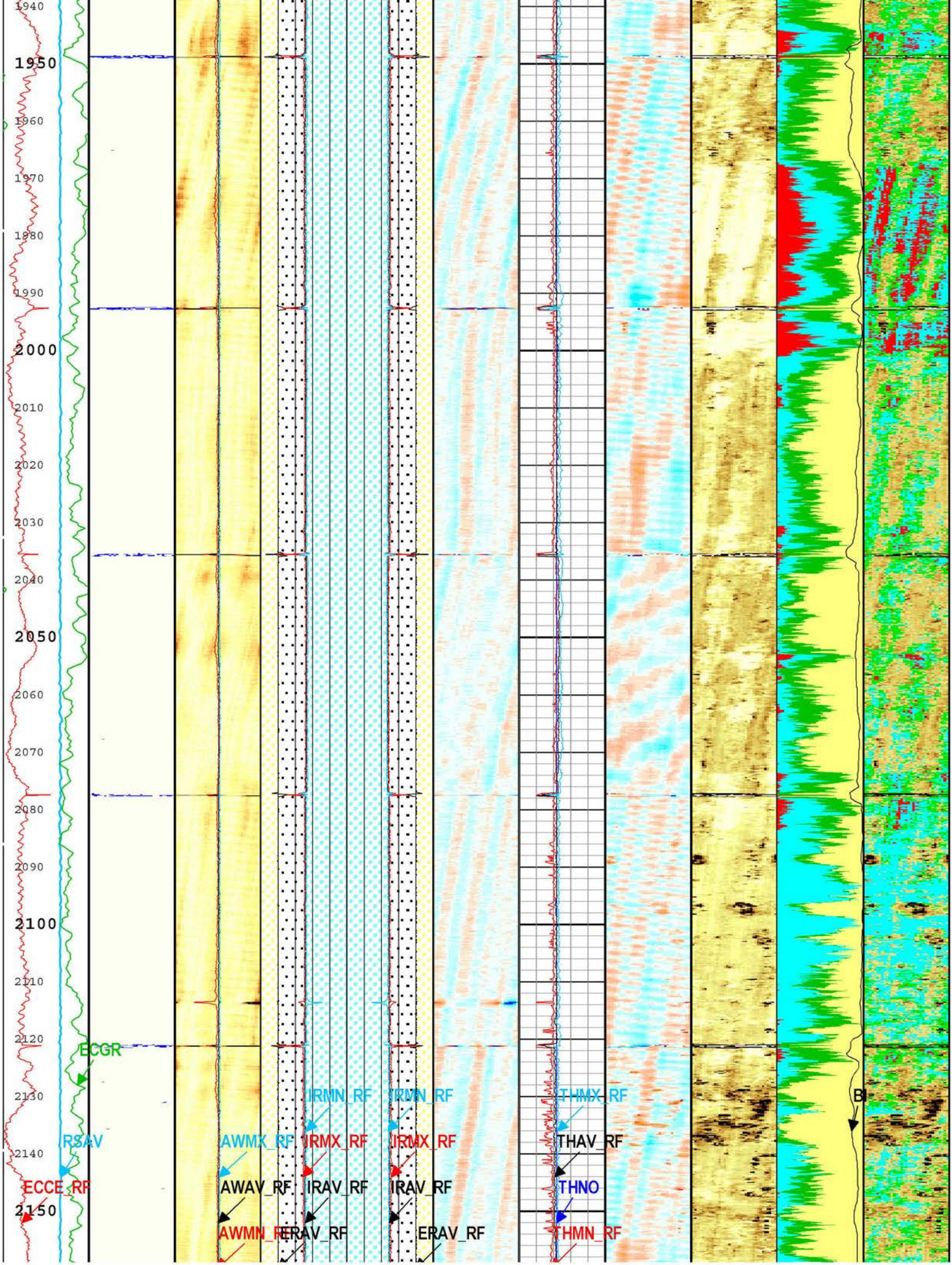
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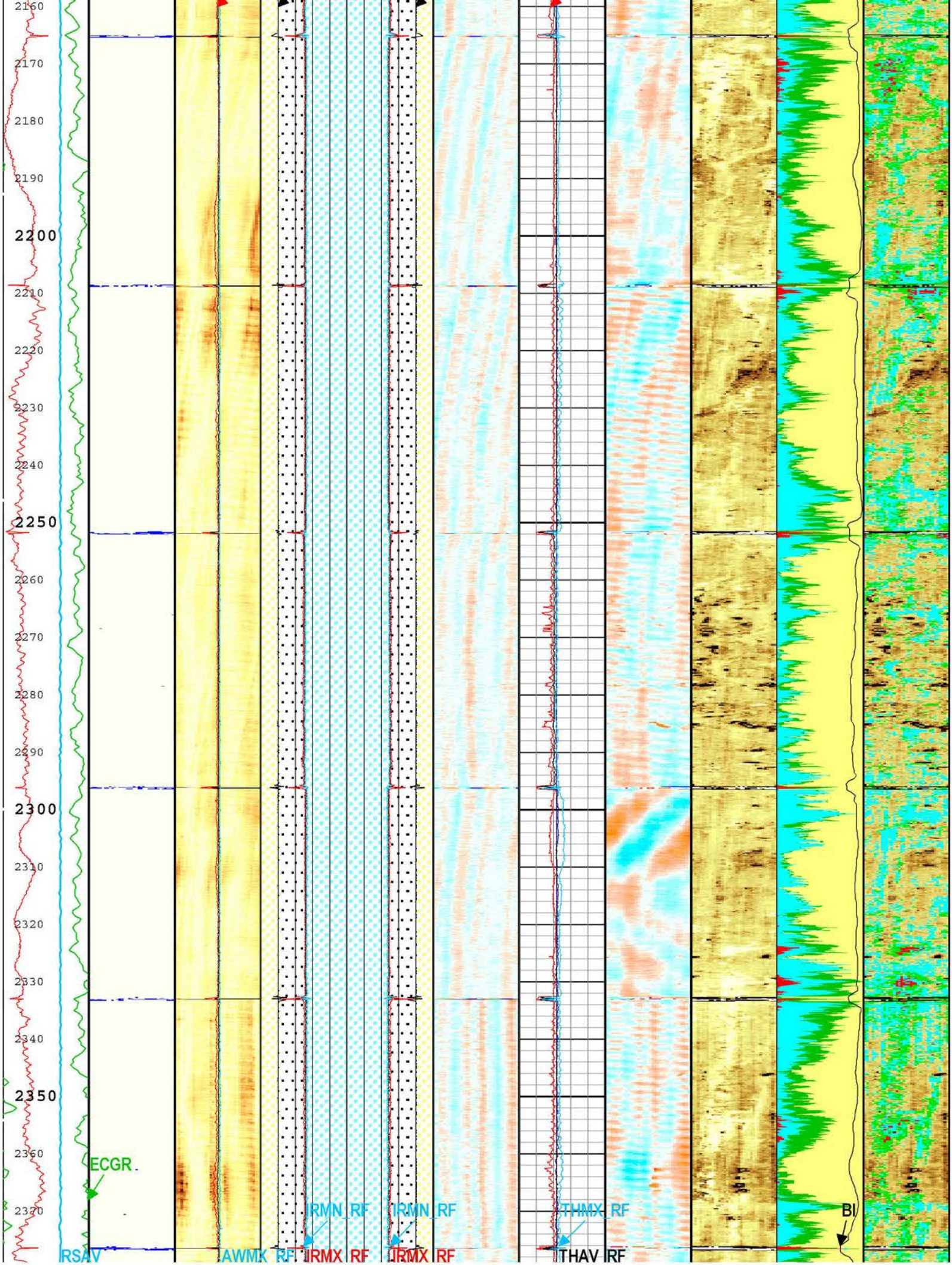
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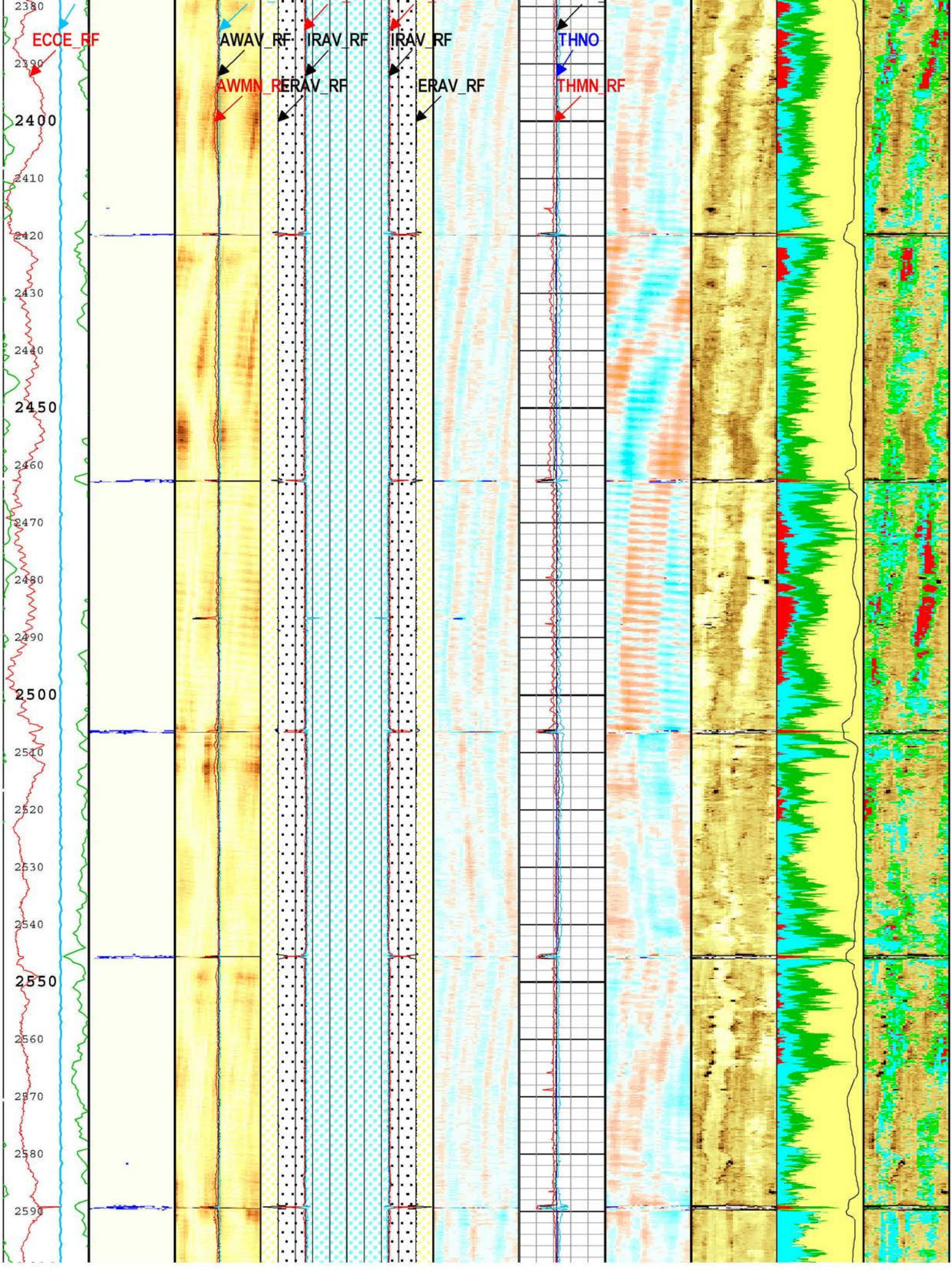
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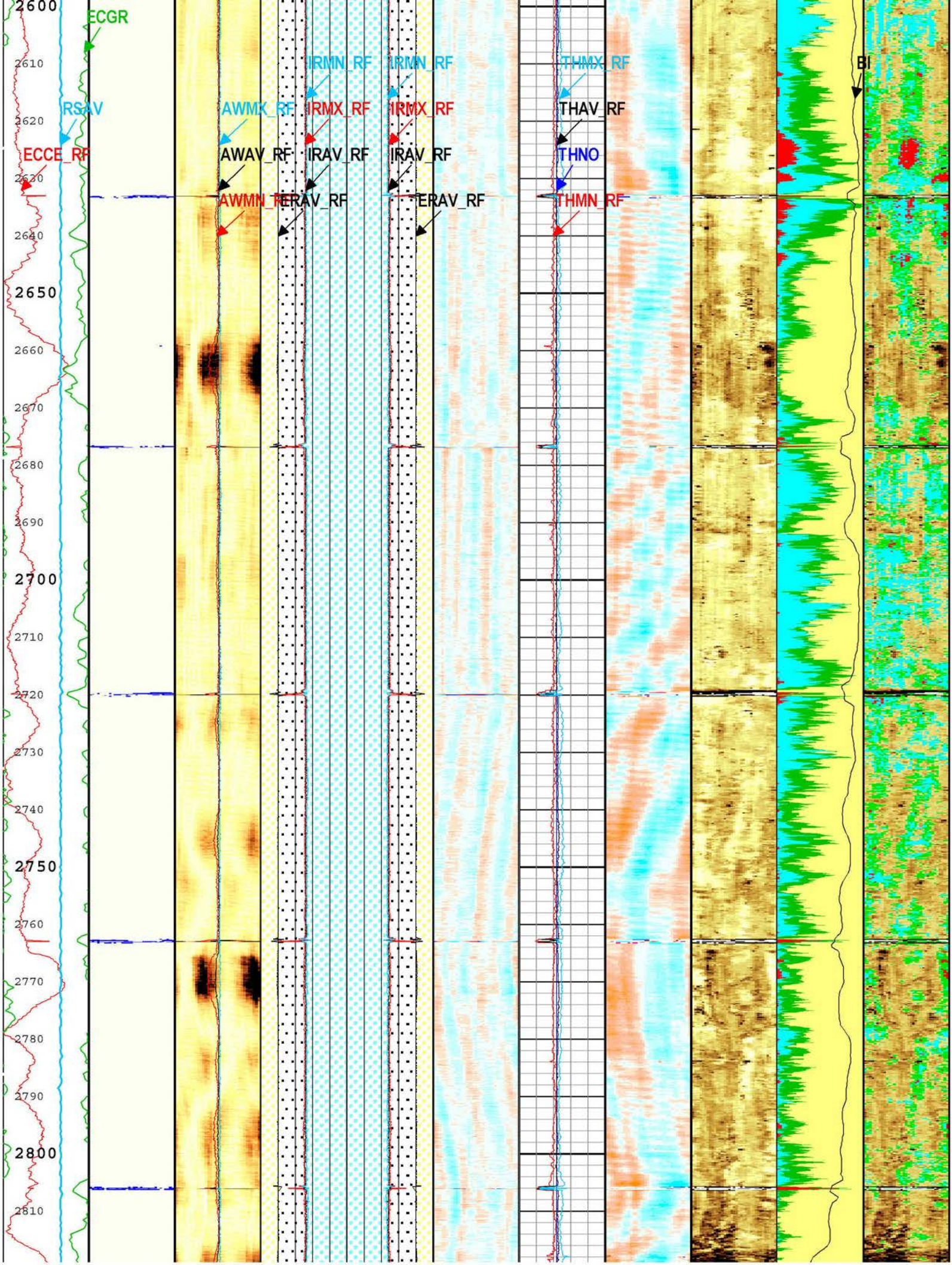
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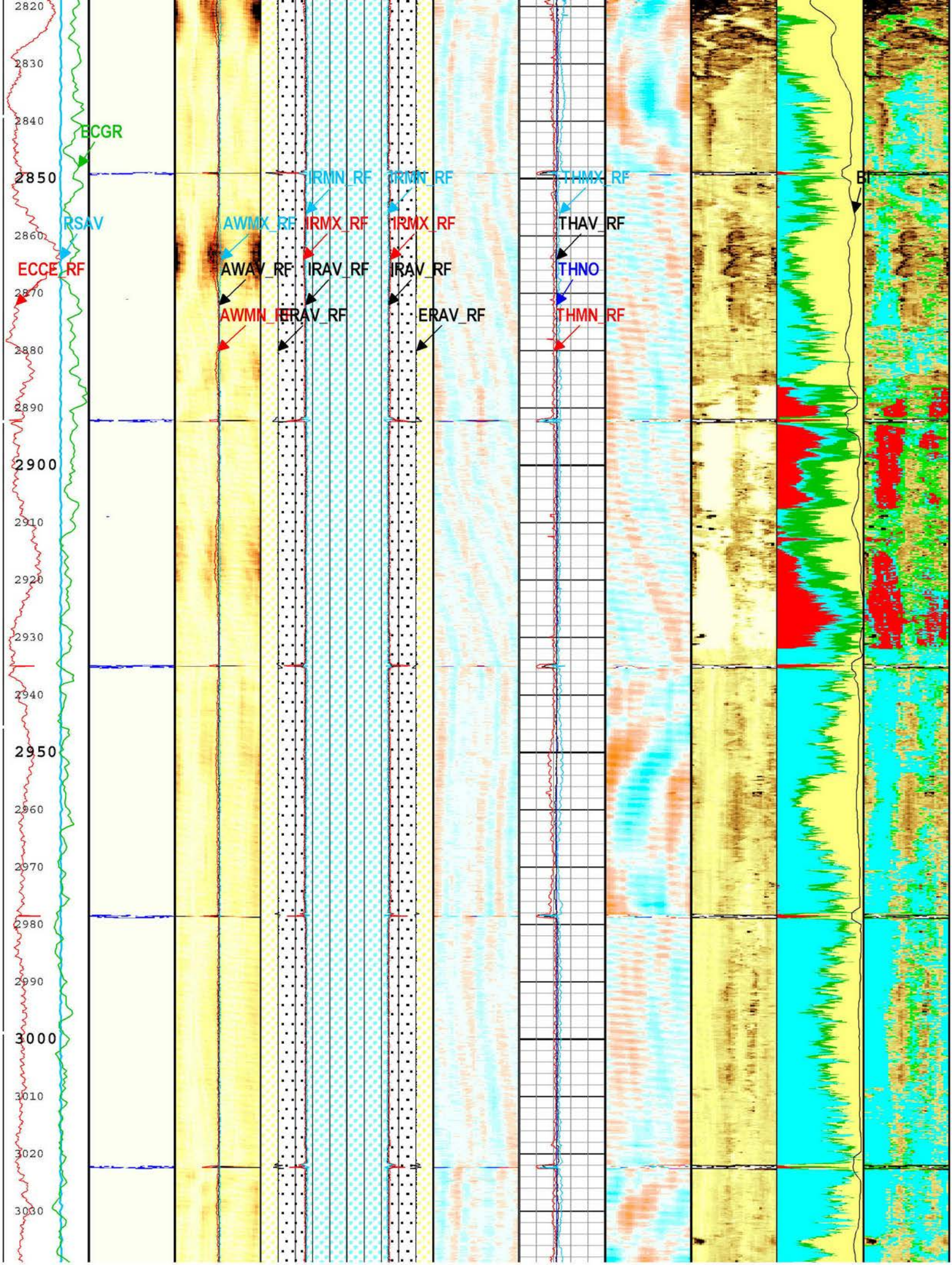
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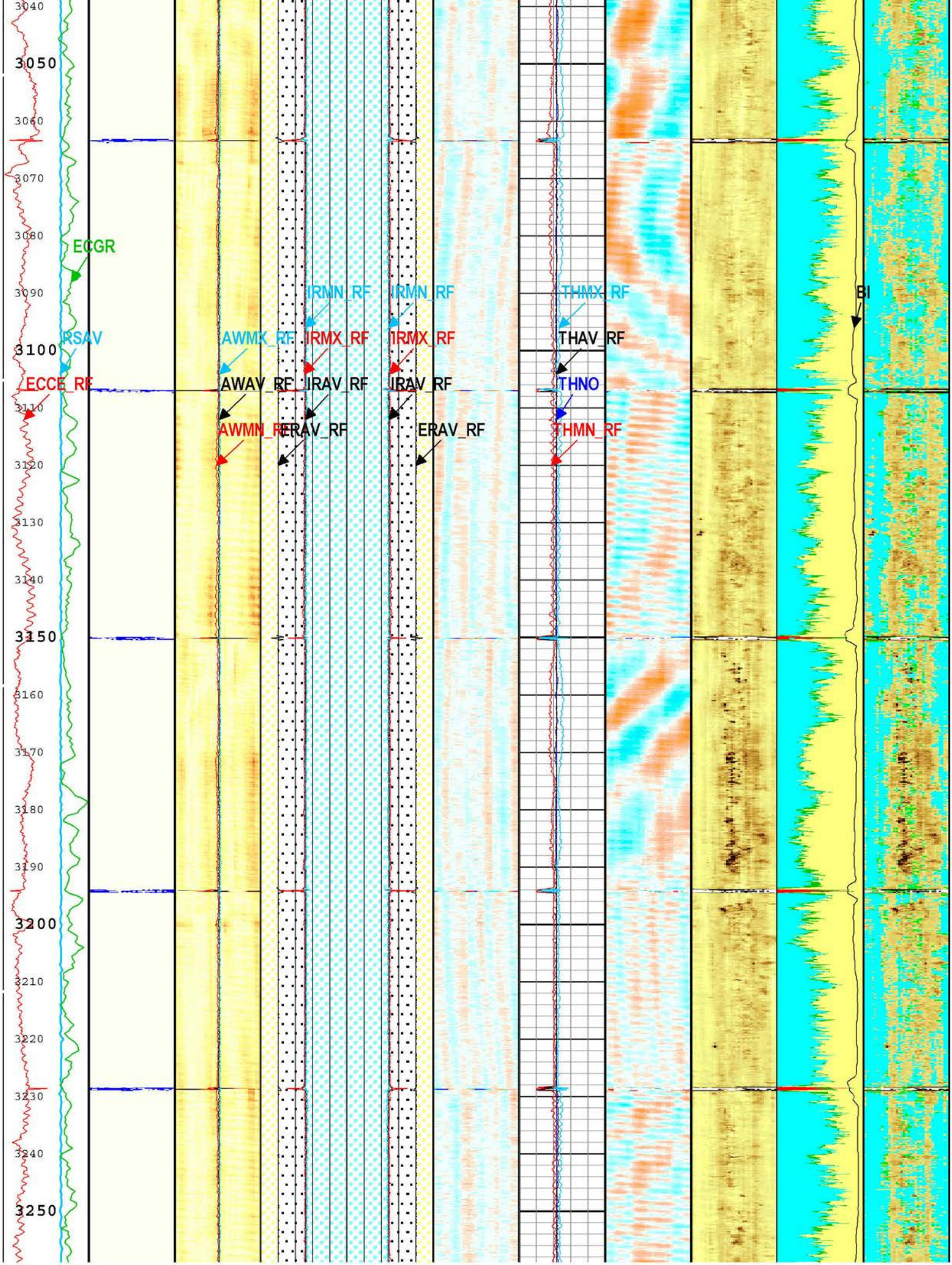
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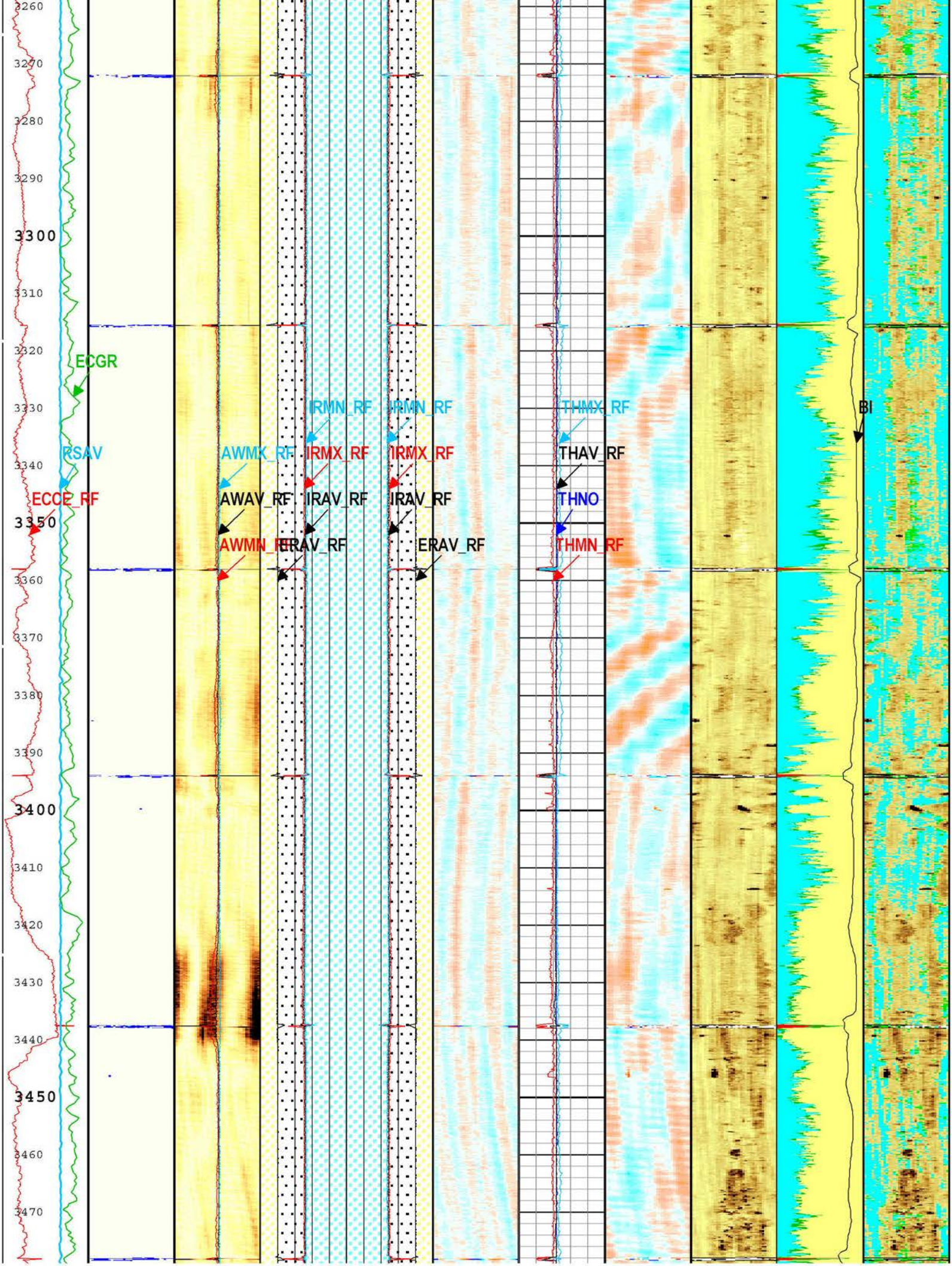
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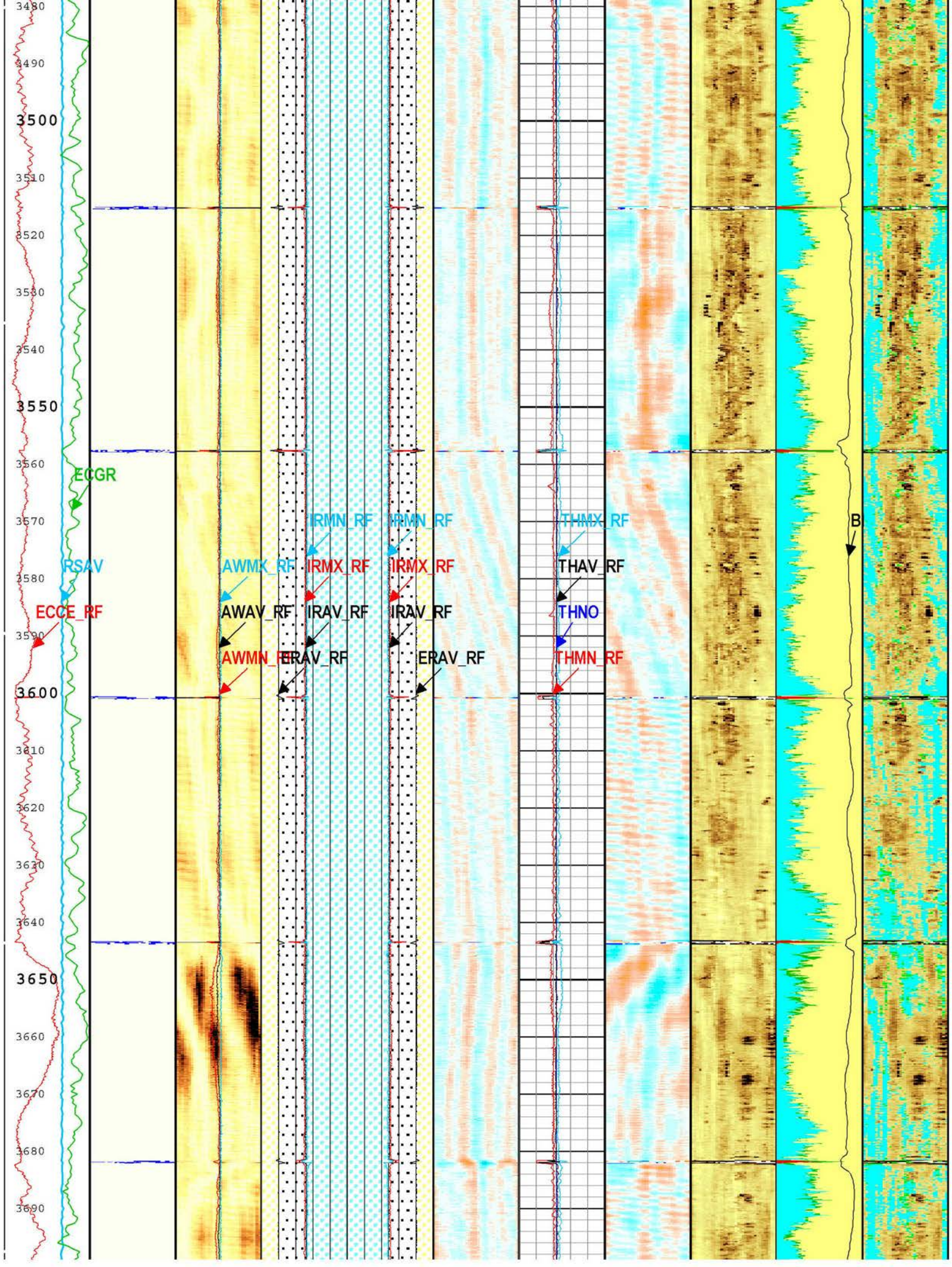
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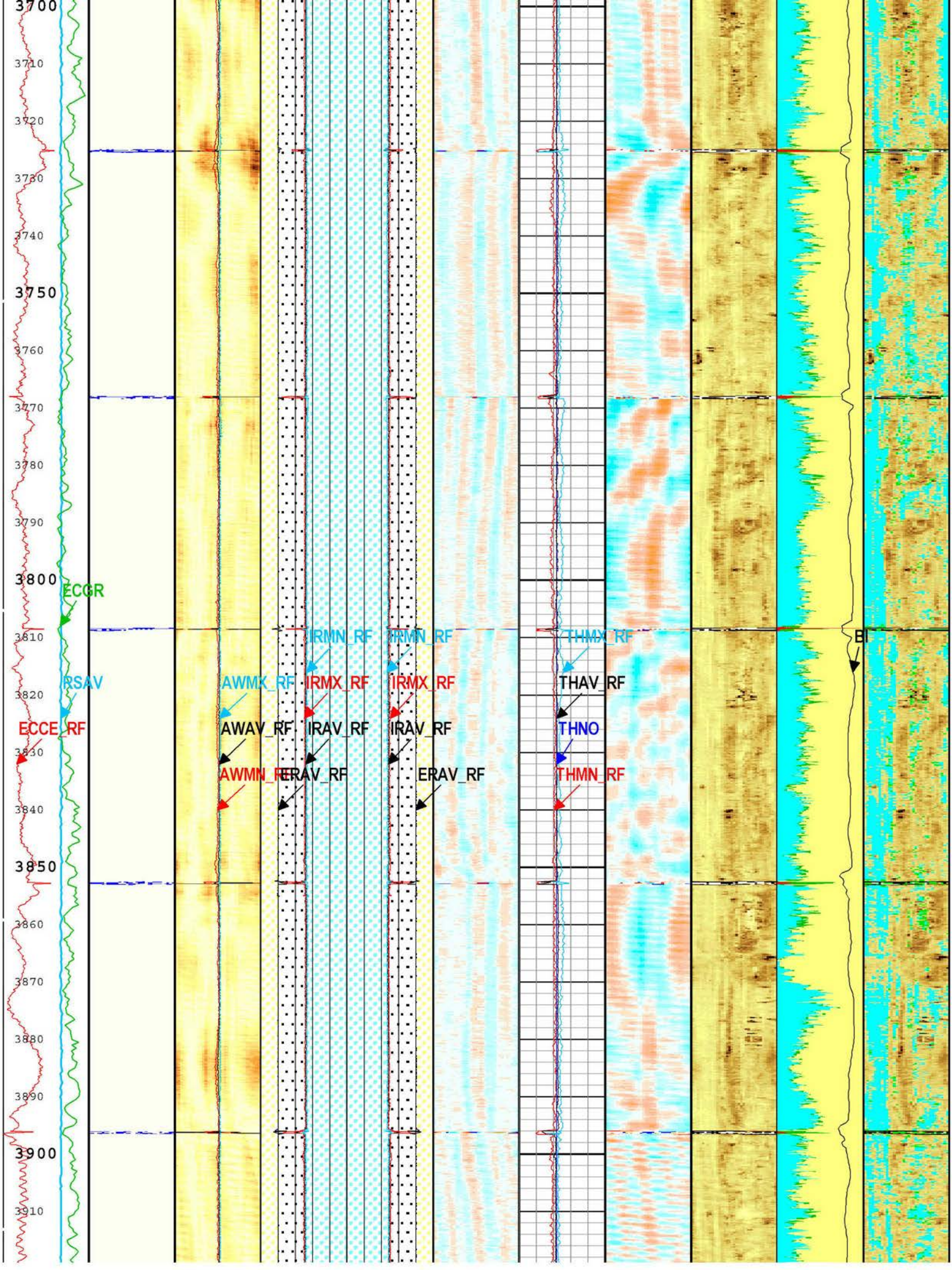
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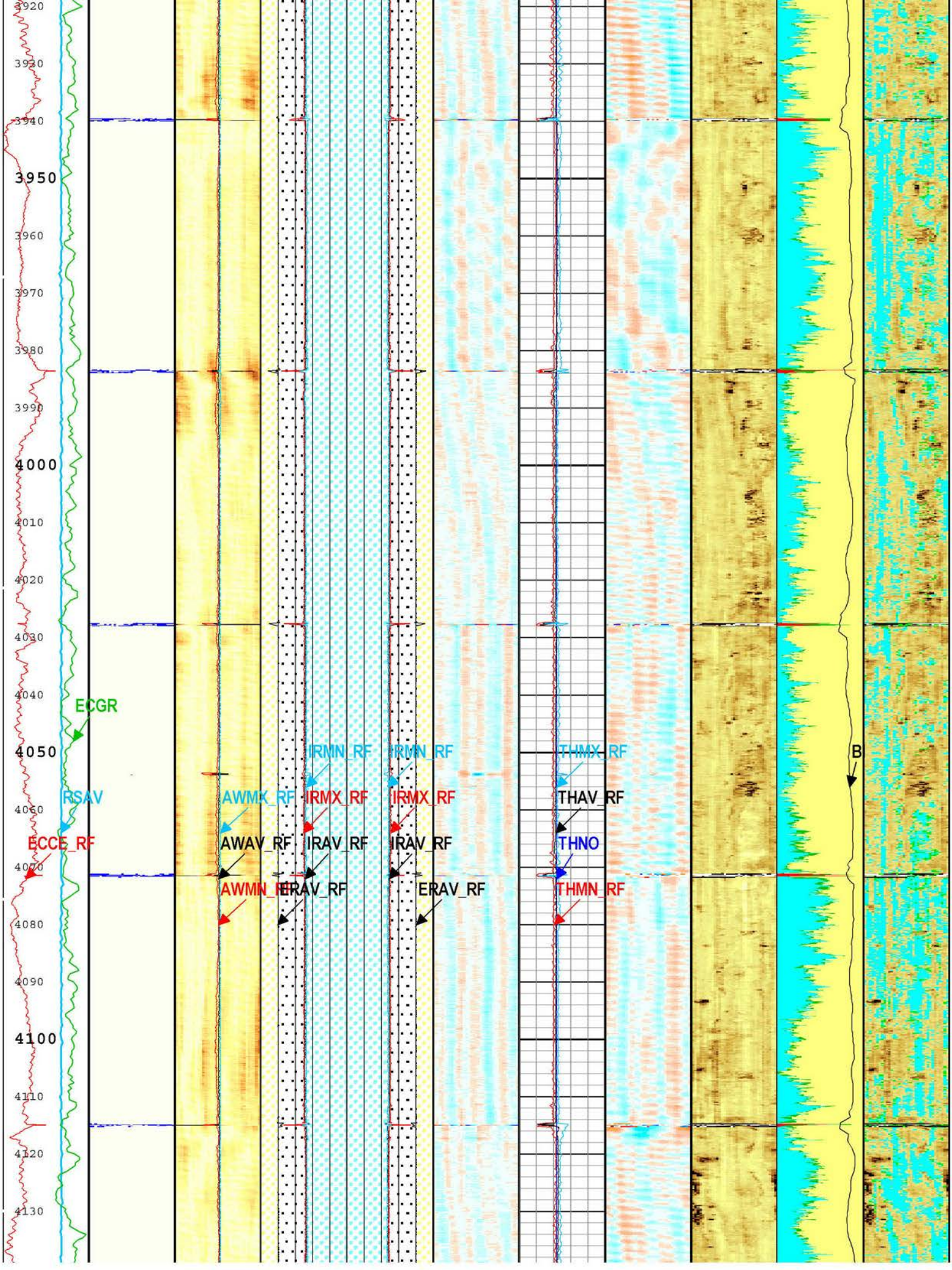
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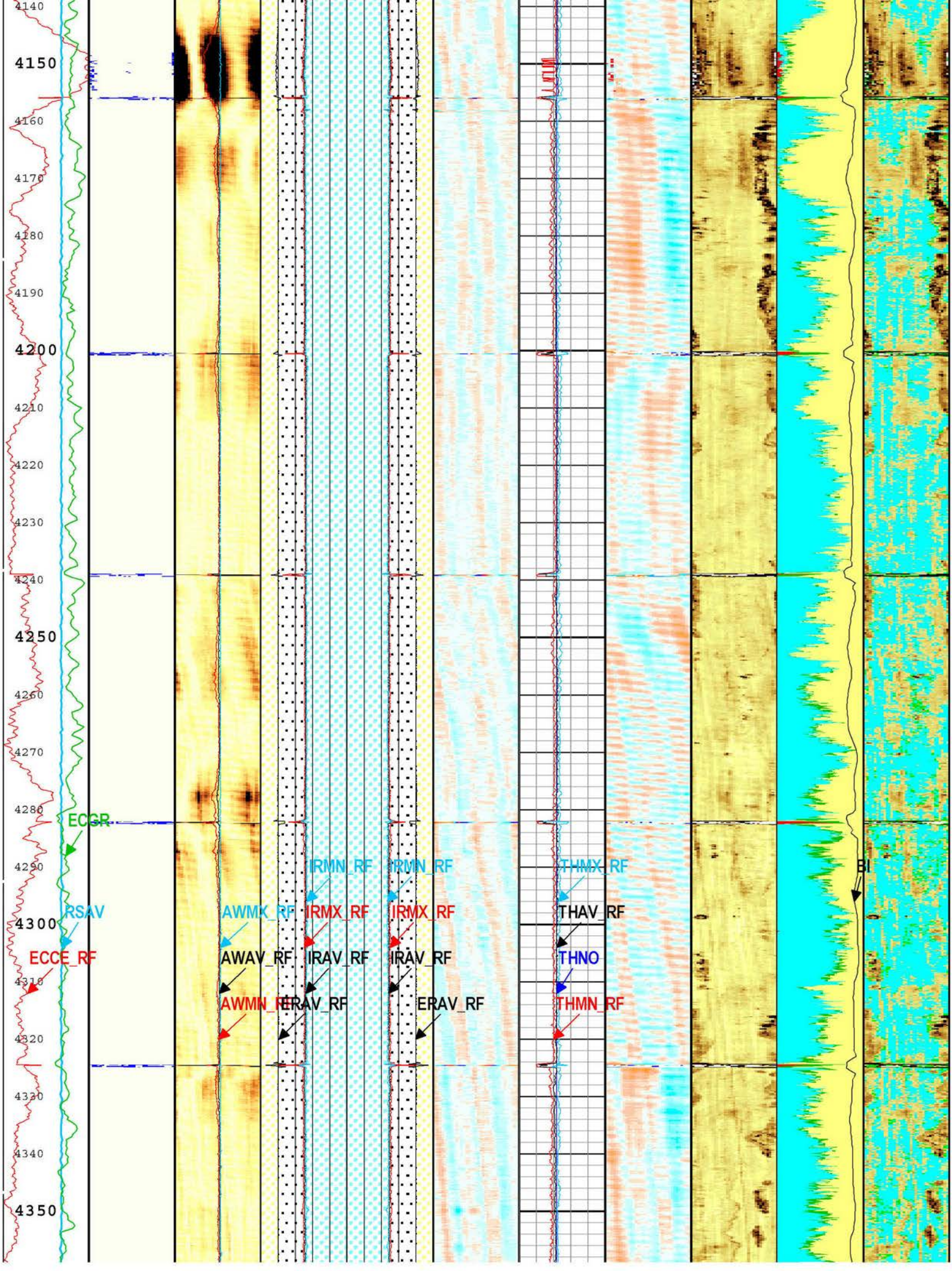
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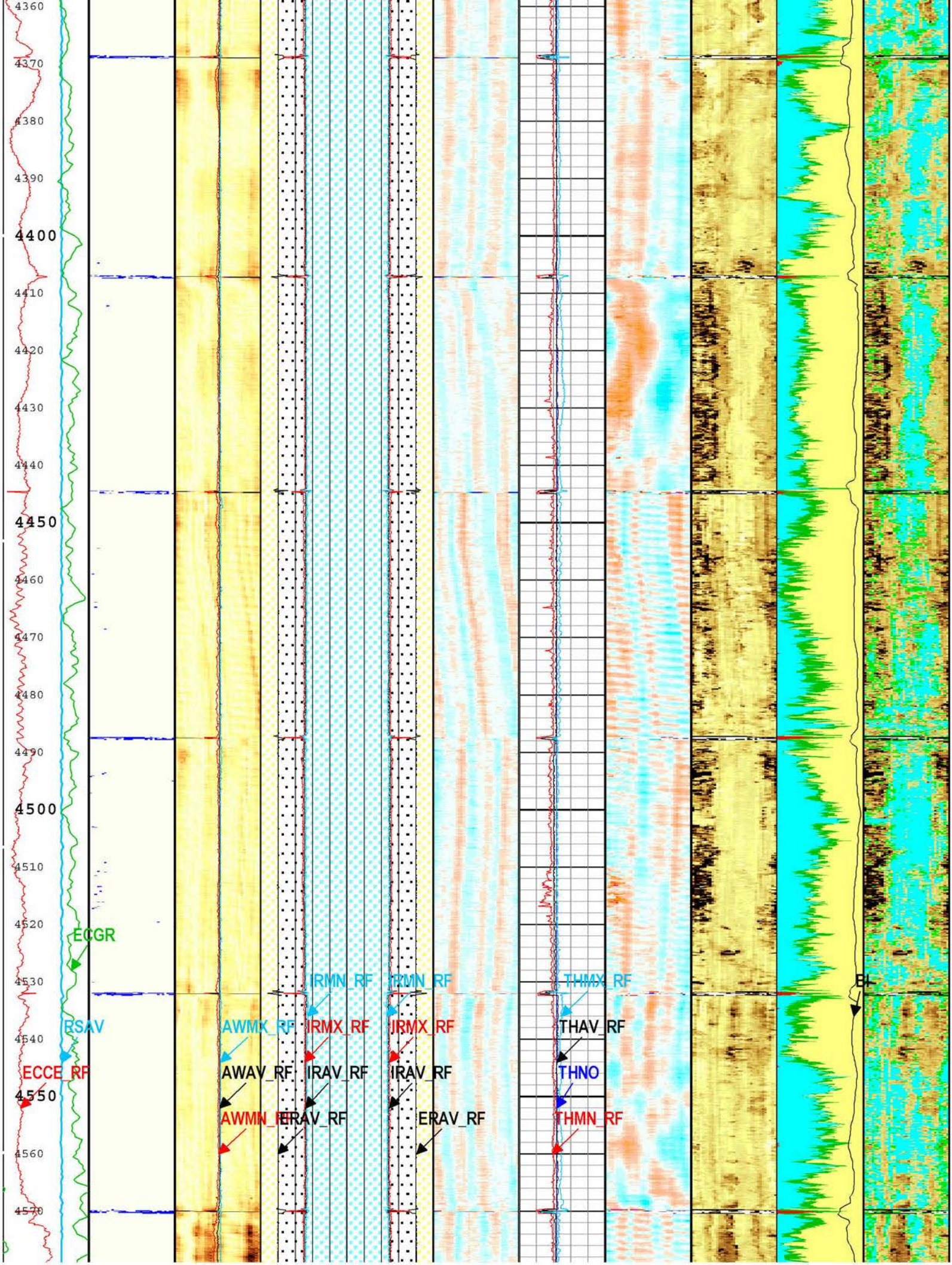
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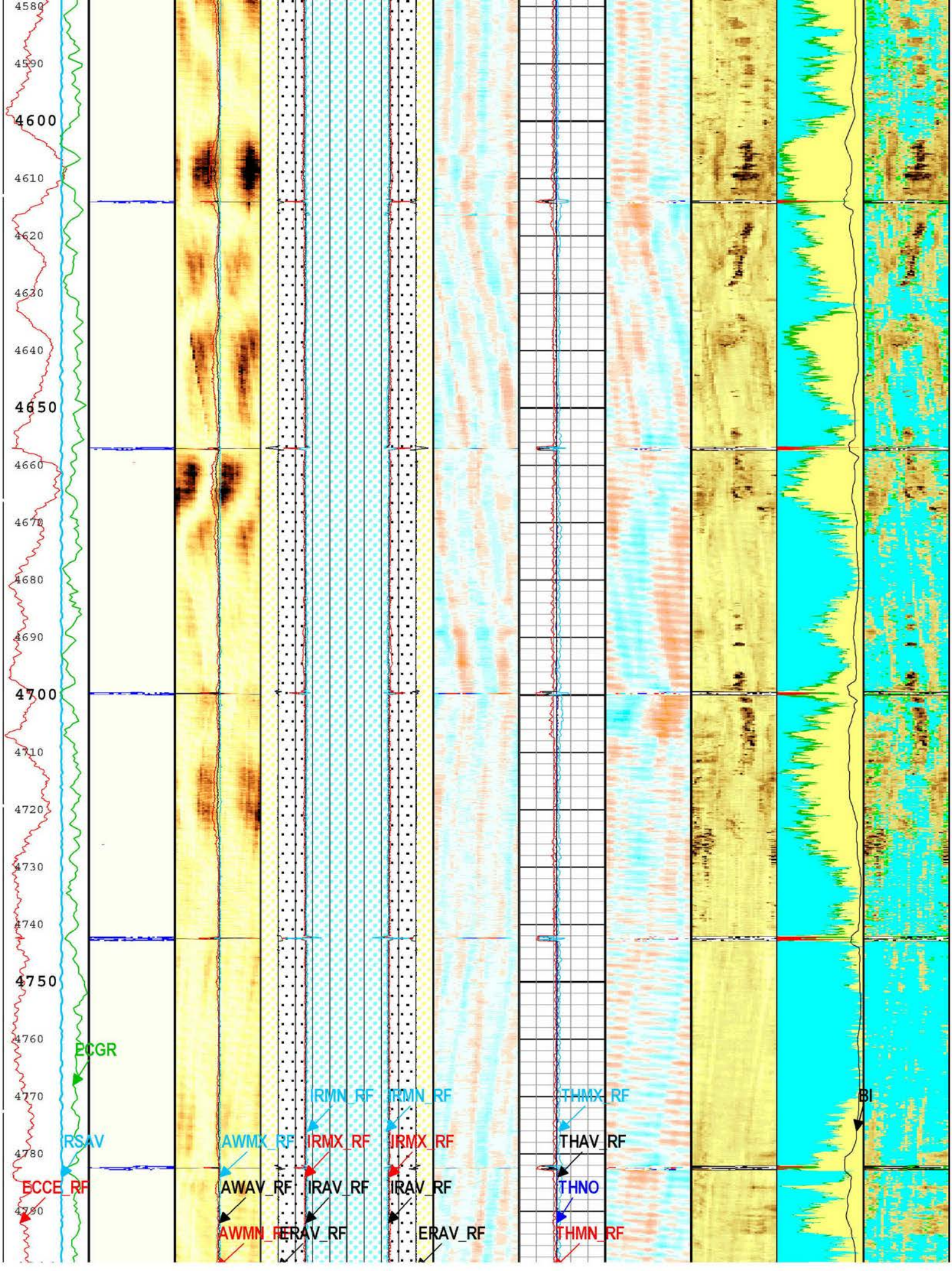
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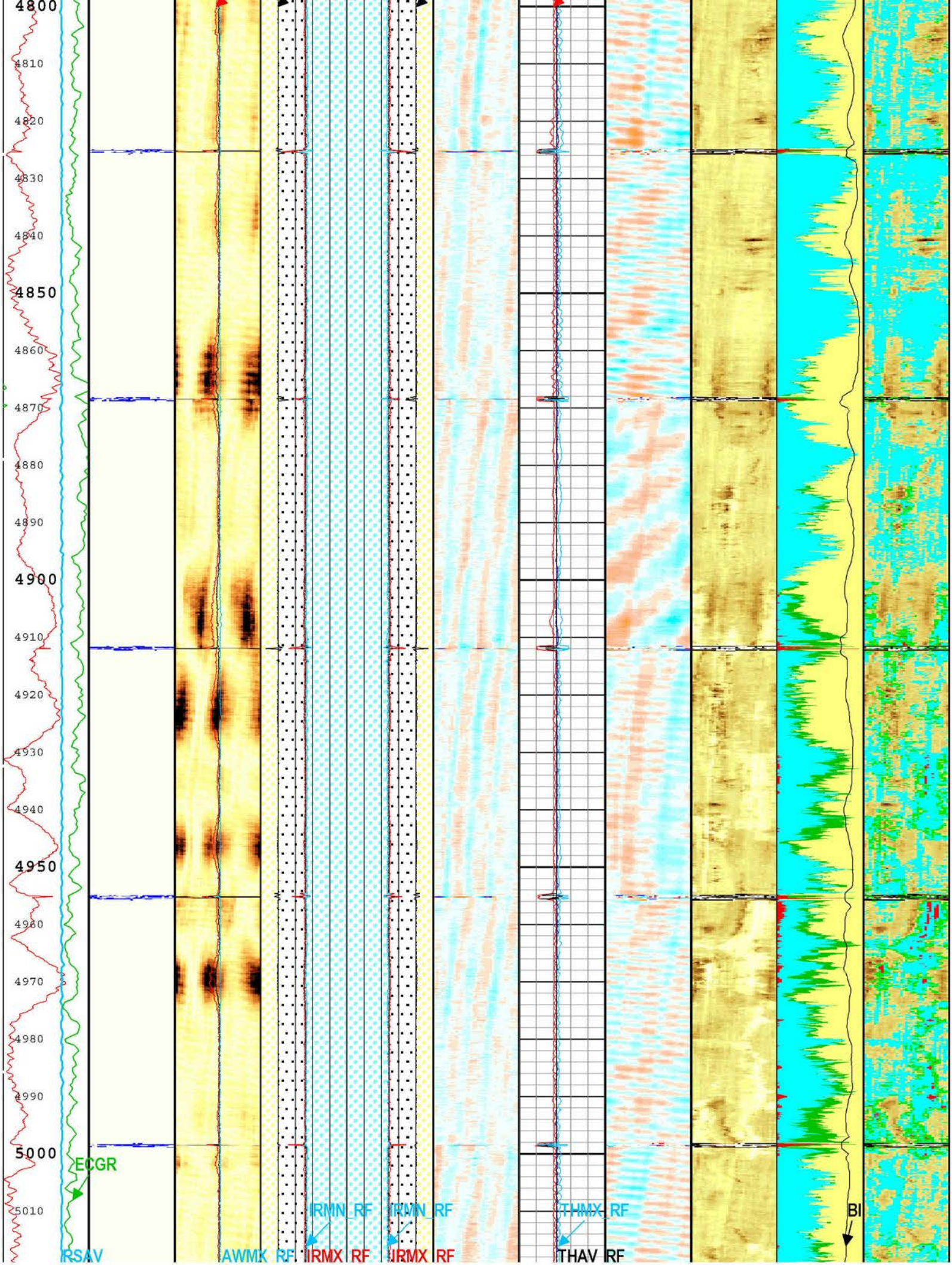
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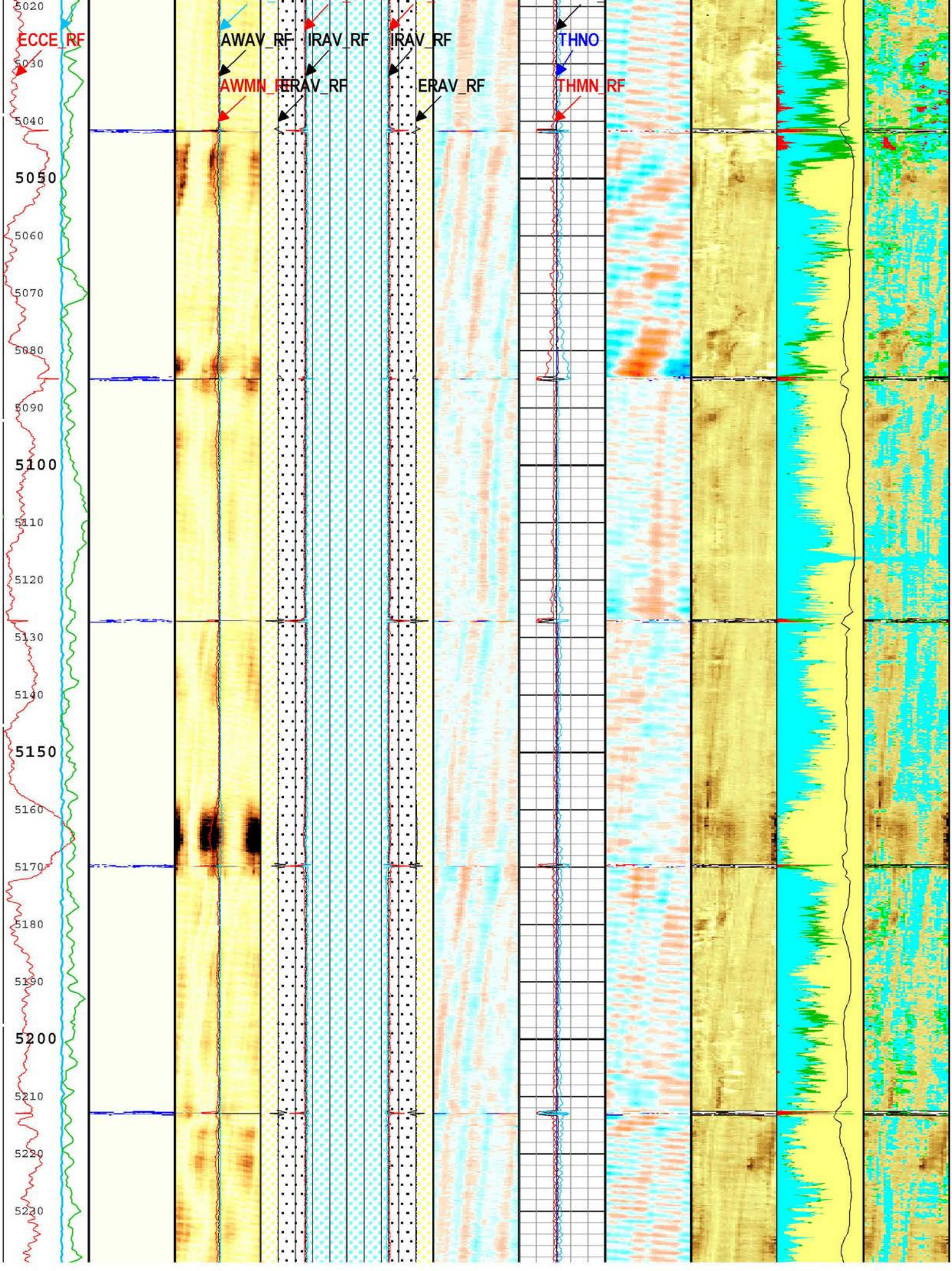
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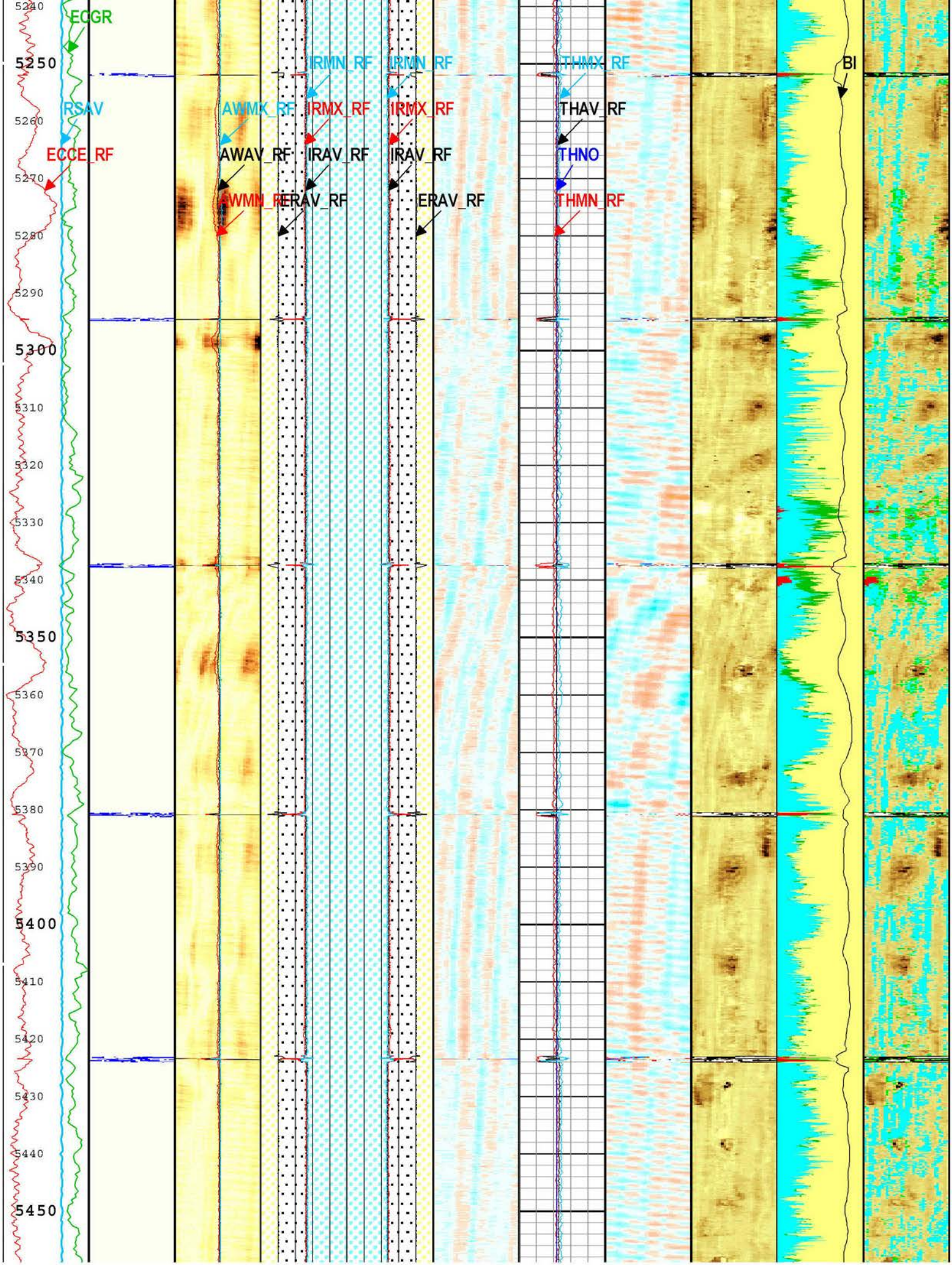
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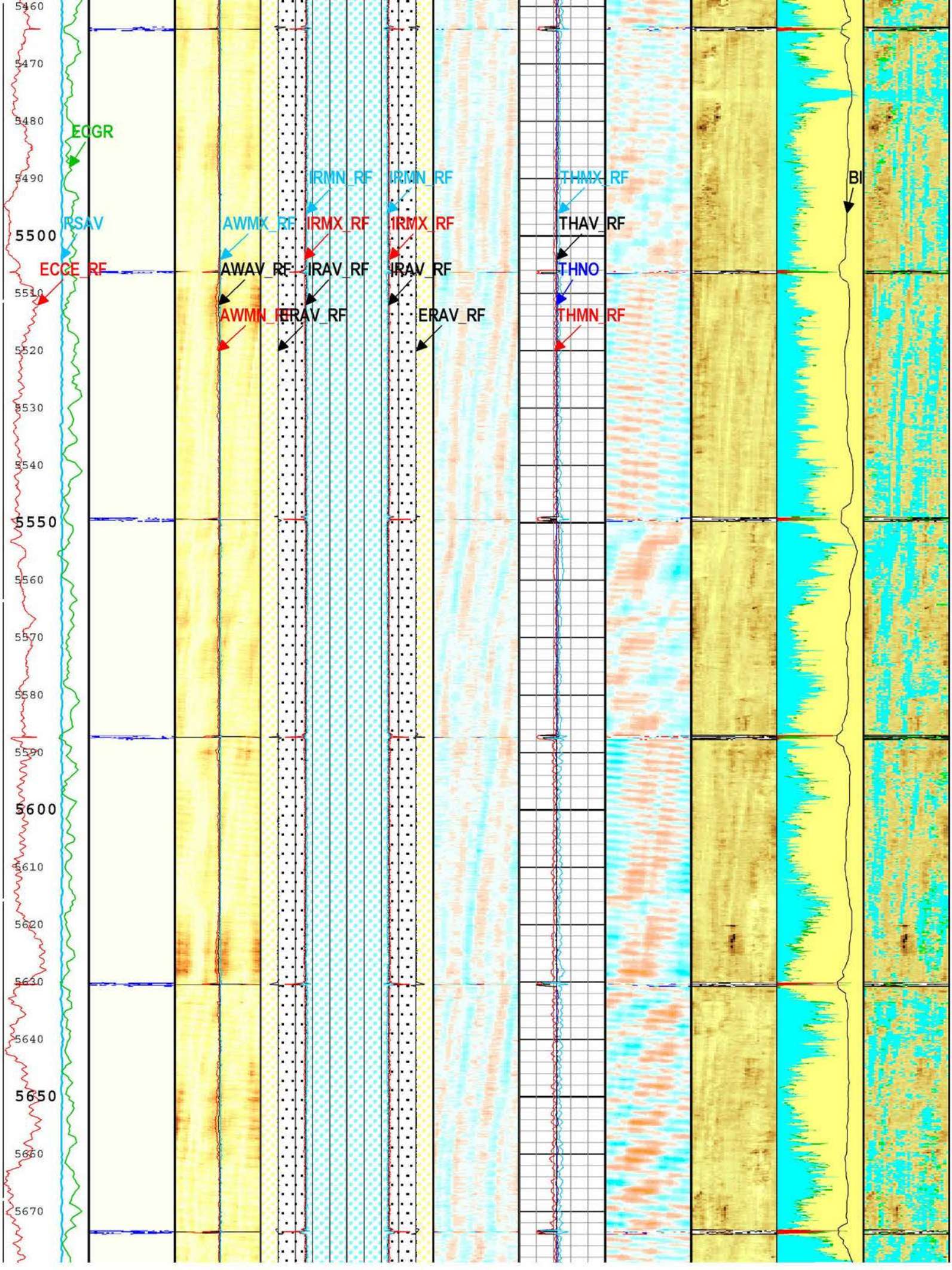
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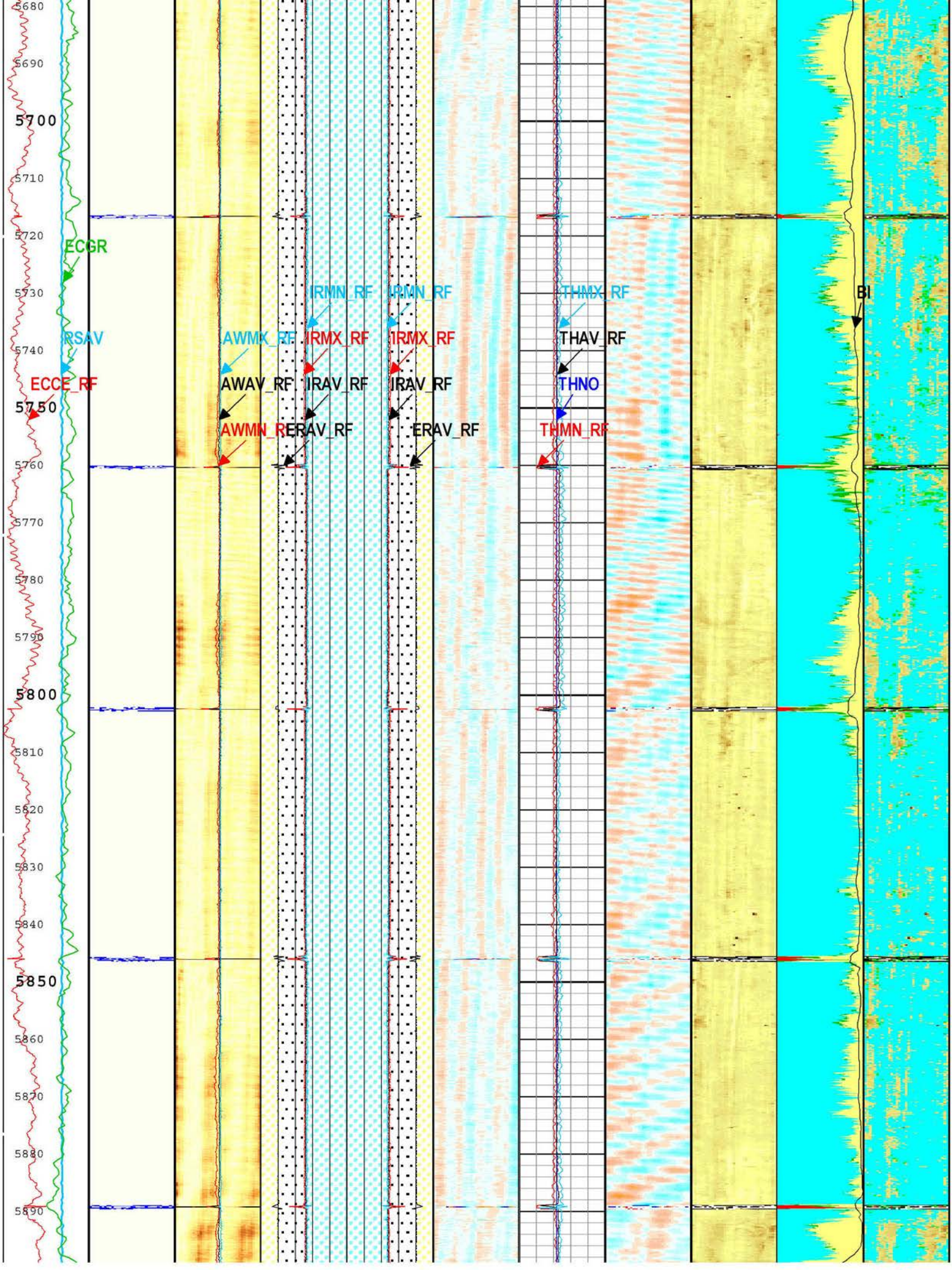
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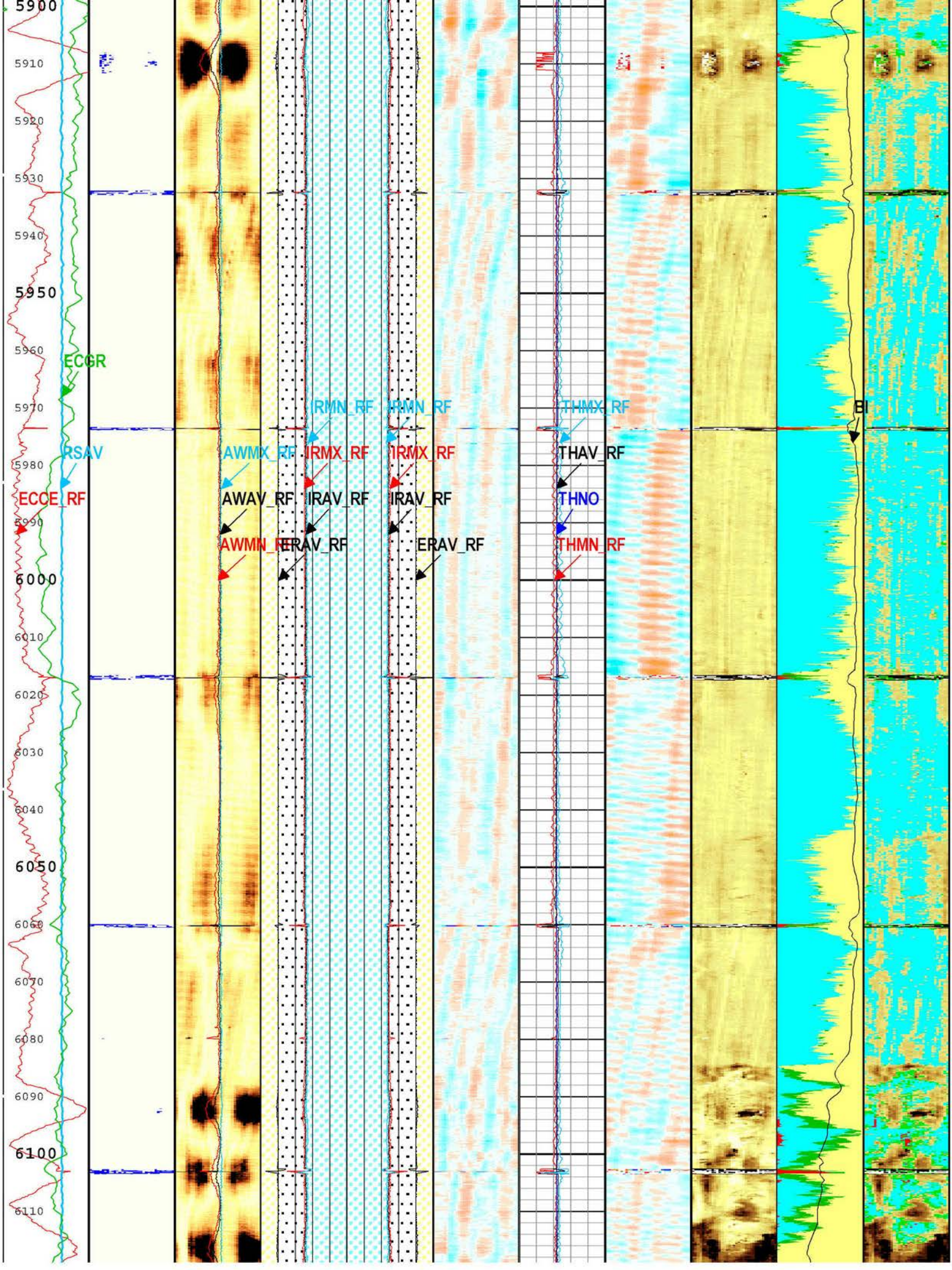
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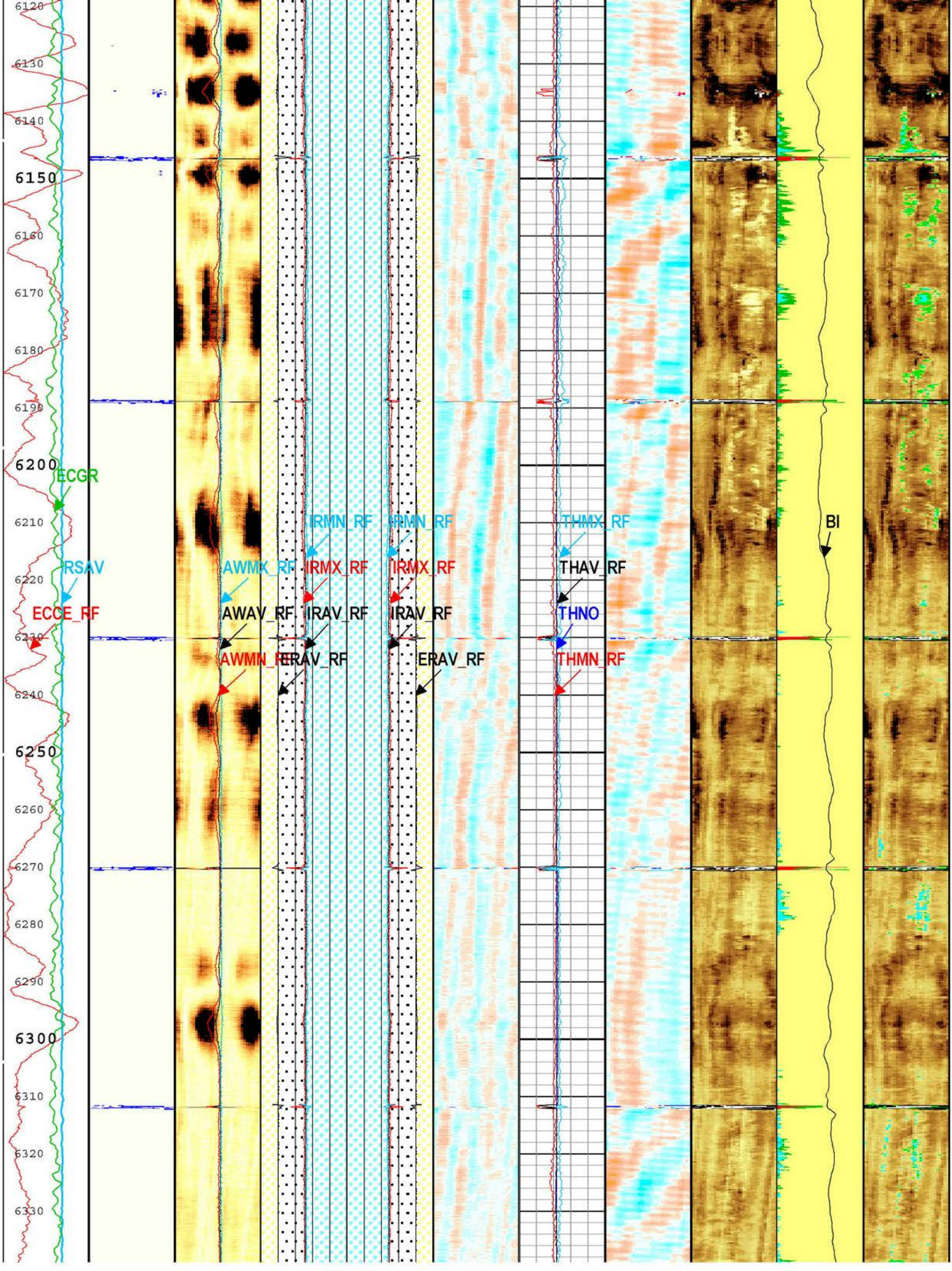
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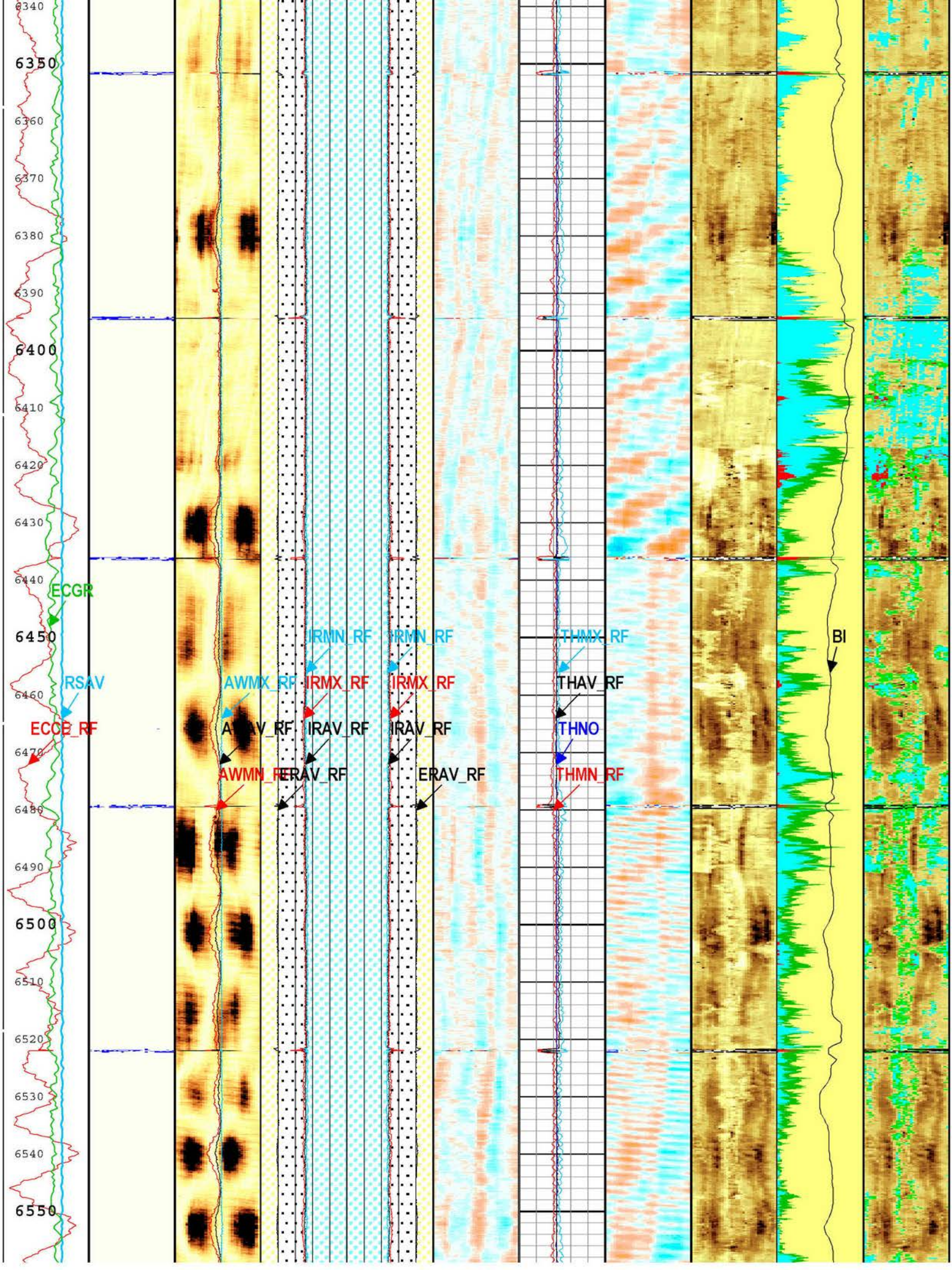
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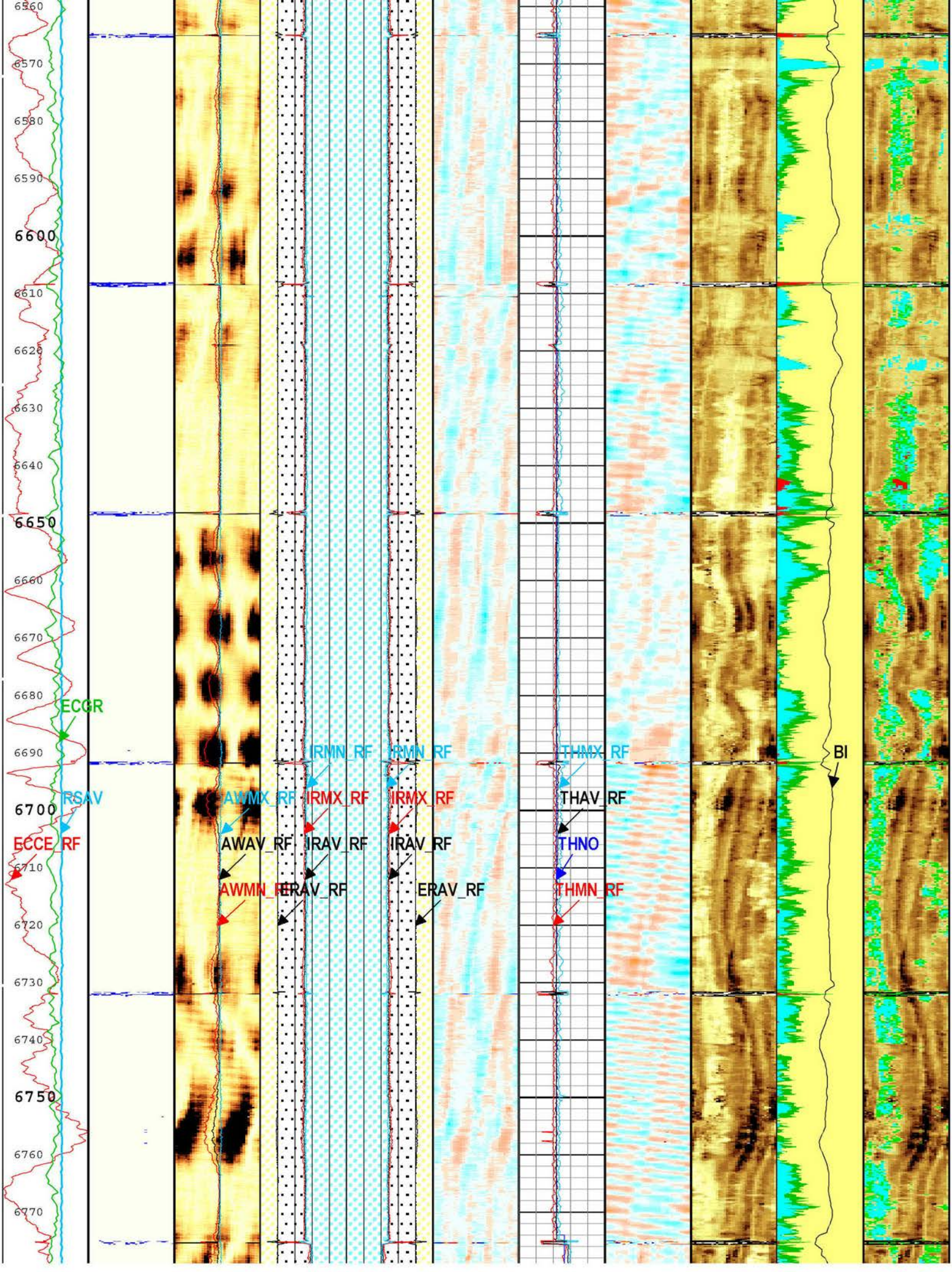
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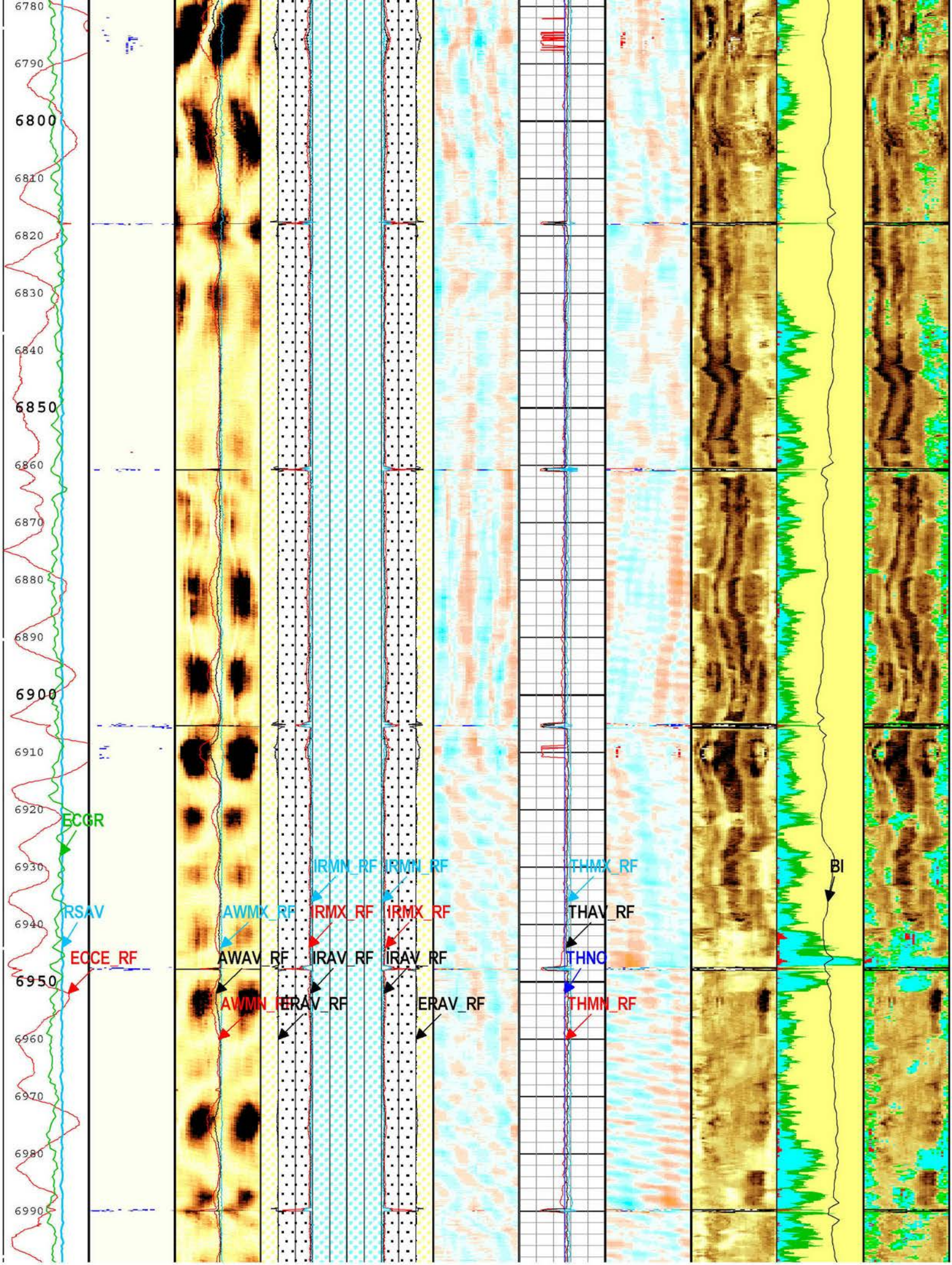
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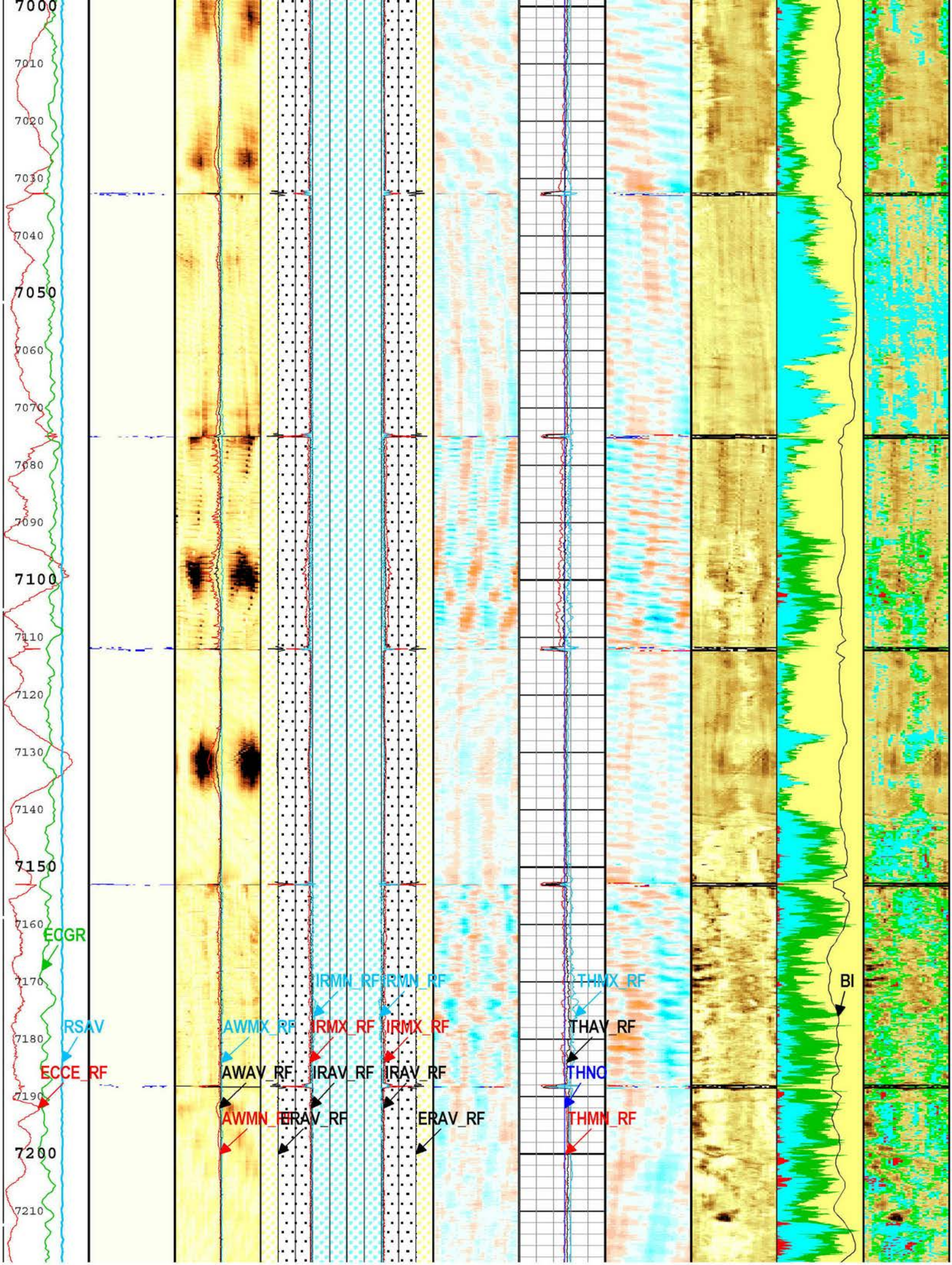
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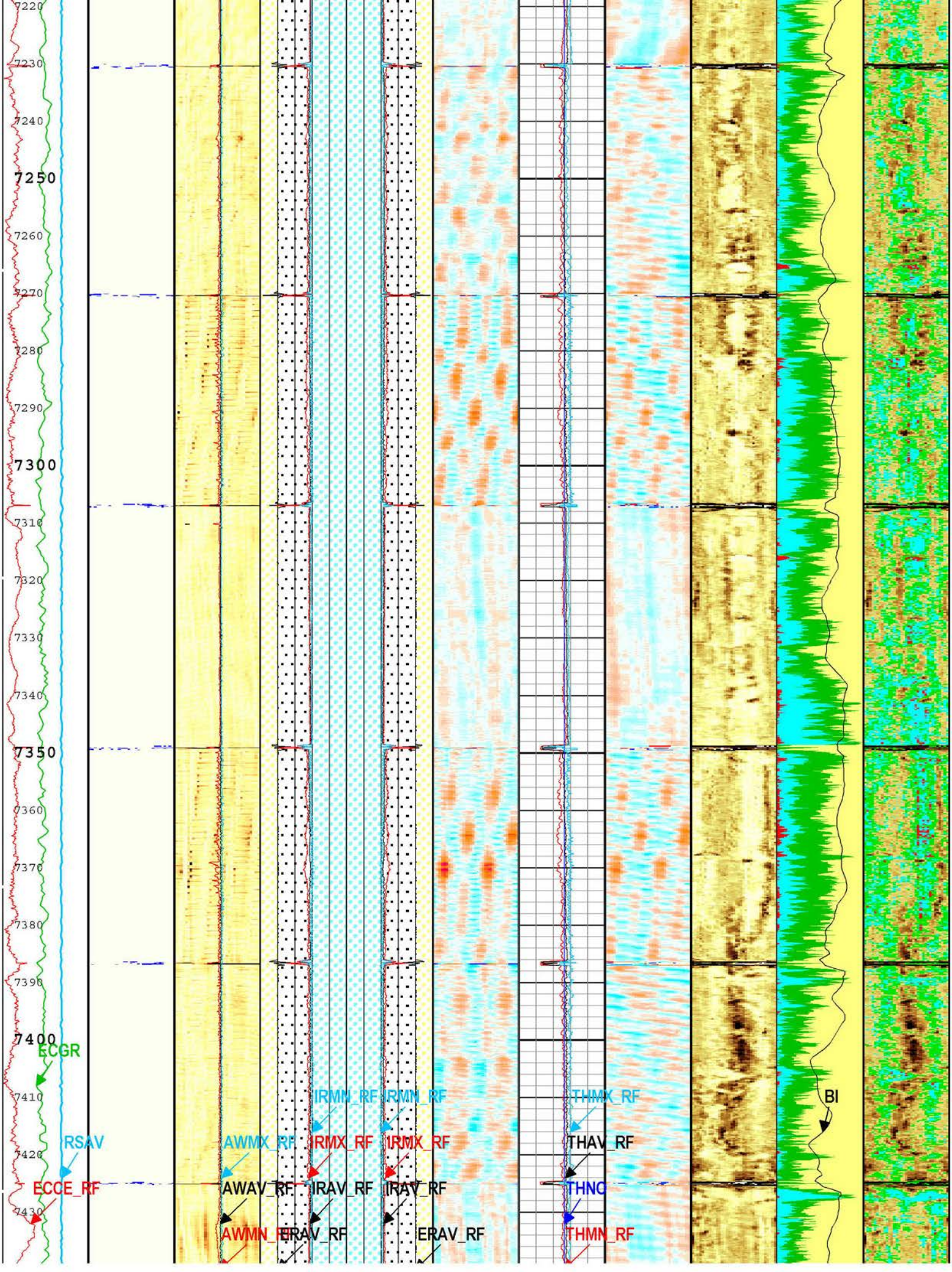
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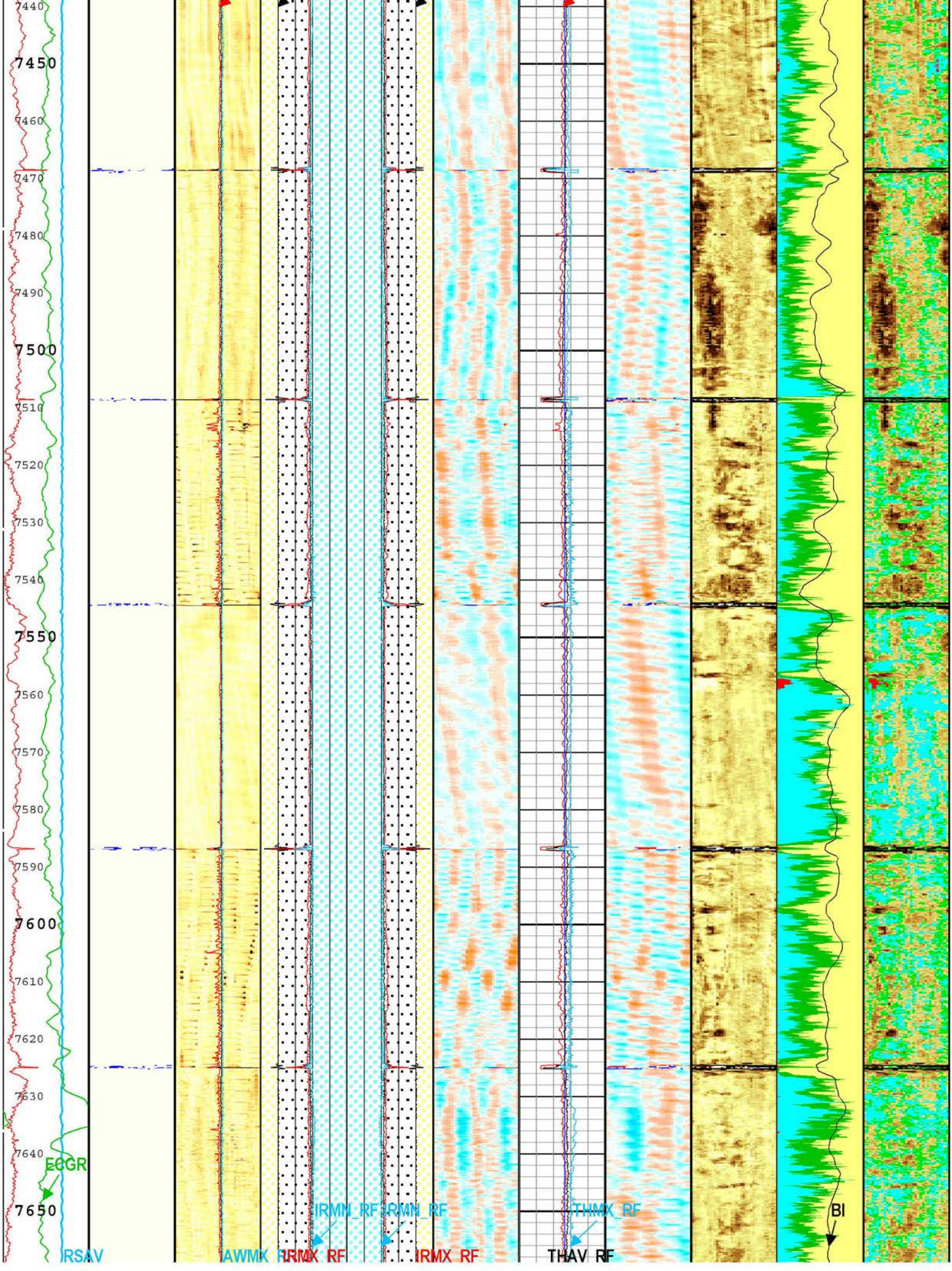
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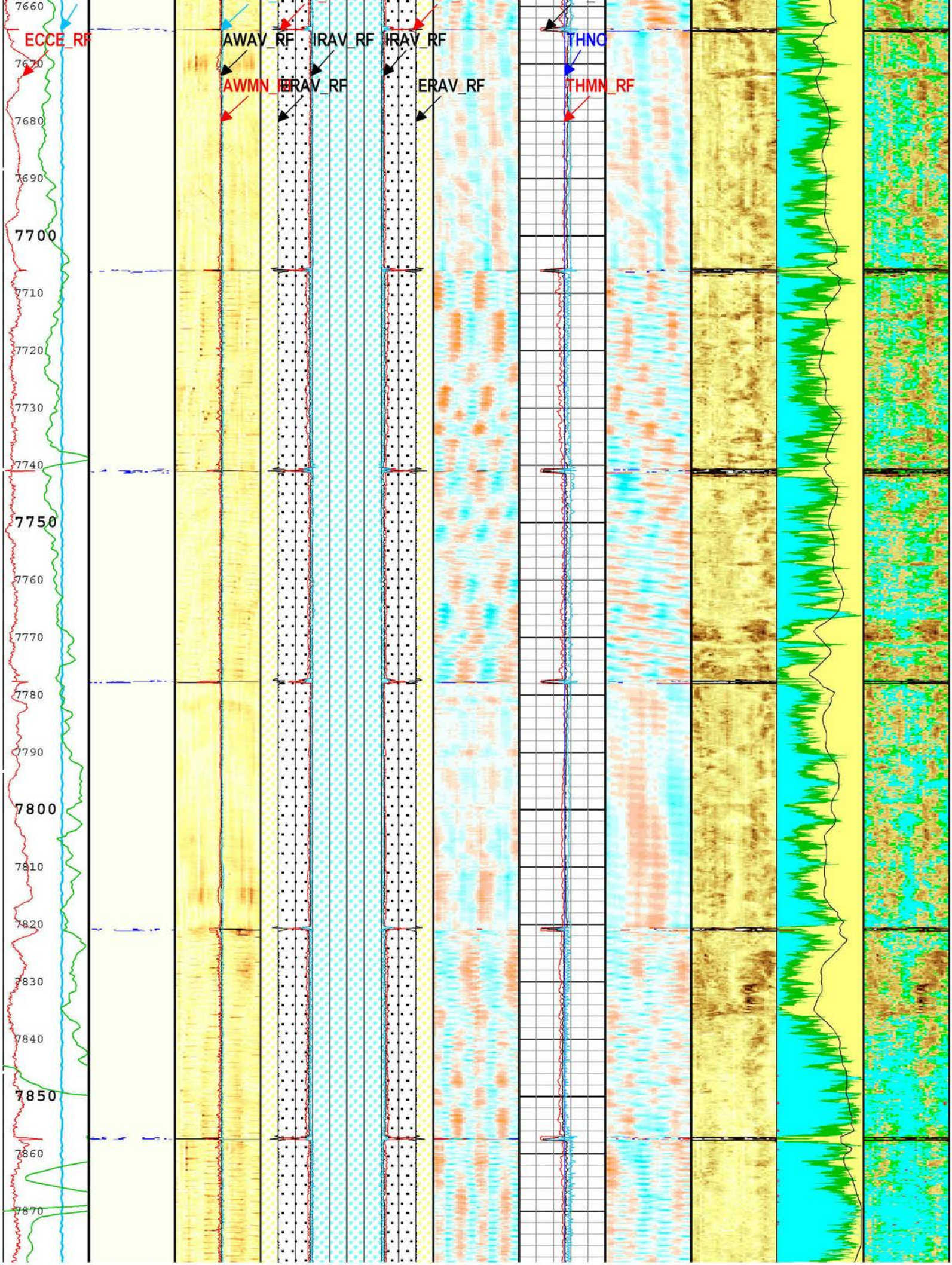
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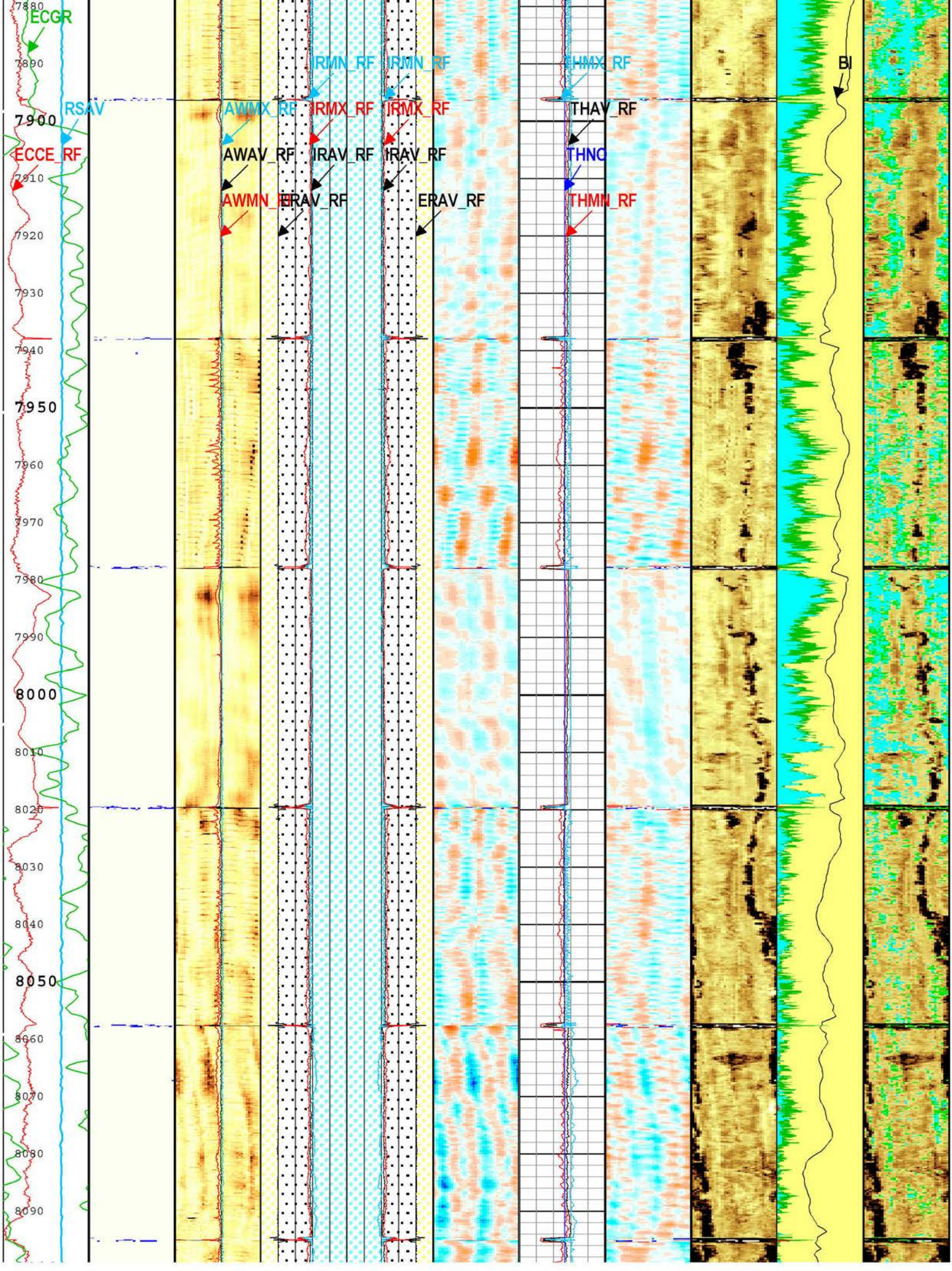
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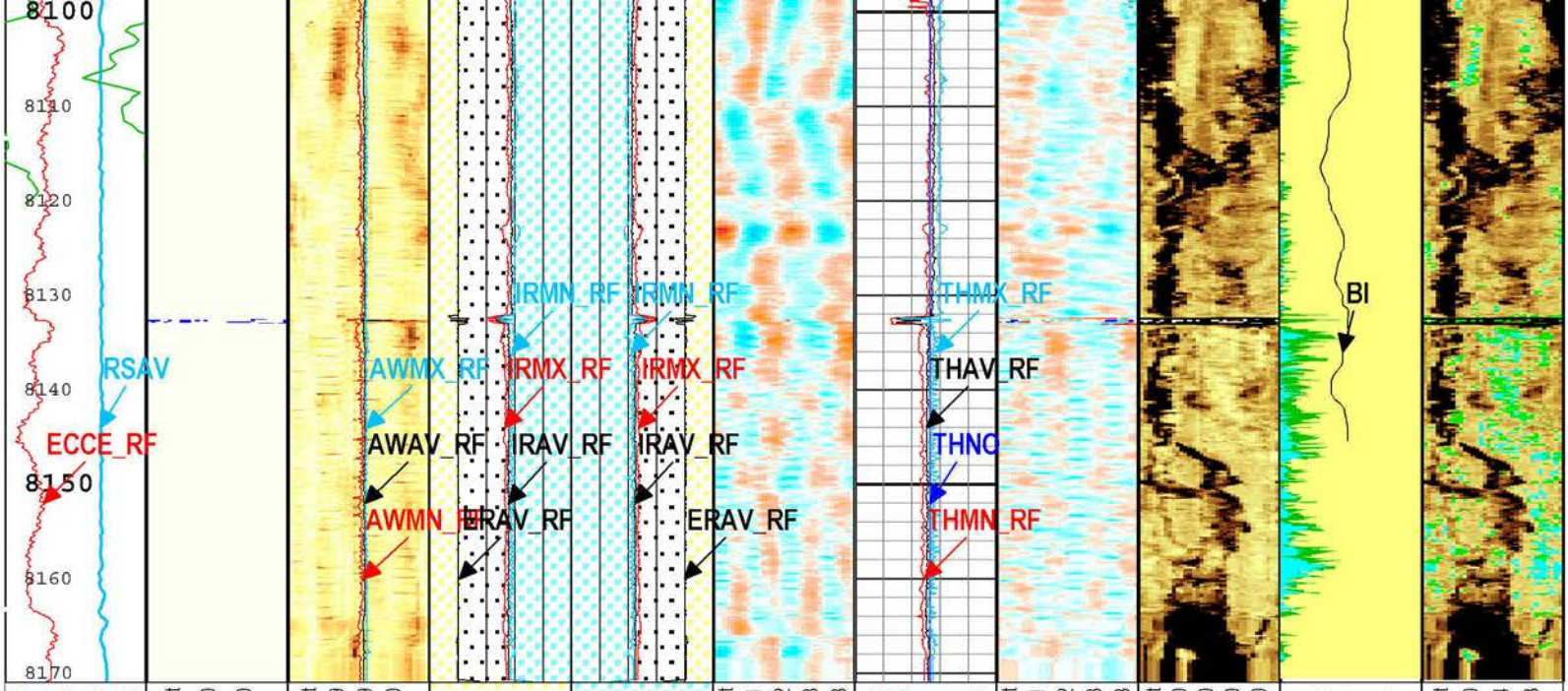


Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8

Gamma Ray (ECGR) HGNS[1]
0 gAPI 150

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]

USIT Processing Flags (UFLG[0]) USIT-E[1]
1 5

Absent -4.799 -2.799 -0.800
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E[1] (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E[1]
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E[1]
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75

ERAV | IRAV
ERAV-IRAV | ERAV
IRAV | IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.7 in 2.7

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
2.7 in 3.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.7 in 2.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
2.7 in 3.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.7 in 2.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
2.7 in 3.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.7 in 2.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
2.7 in 3.7

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1] (in)

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E[1]
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E[1]
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E[1]
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1] (in)

Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)

Ratio of Cement Measurements to Total (CEMR) USIT-E[1]
1 0

Micro-debonding Ratio (MDR) USIT-E[1]
1 0

Ratio of Gas Measurements to Total (GASR) USIT-E[1]
1 0

Bonded
Gas
Liquid
Micro-debonding

Bond Index (BI) DSLT-H[1]
1 0

Absent 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)

Absent 2.599 4.563 6.527
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)

USIT Processing Flags (UFLG[0]) USIT-E[1]

1 - UFLG 1 Value within [0.0 - 1.5] - :

2 - UFLG 2 Value within [1.5 - 2.5] - :

UTIM Error

Pulse Origin Not Detected

3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

WINLEN Error
Casing Thickness Error
Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Composite 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Oct-2016 14:28:19

Two

Cement Log 2 IN = 100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Two	Log[6]:Up	Up	6845.38 ft	8162.42 ft	19-Oct-2016 2:46:42 PM	19-Oct-2016 3:11:08 PM	ON	2.05 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Frew 4
Two: Log[6]:Up:S008

Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Oct-2016 14:28:43

TIME_1900 - Time Marked every 60.00 (s)

ERAV_IRAV | ERAV_RHF1
IRAV_LHF1 | IRAV_ERAV
LHF1_ERAV | RHF1_IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.7 in 2.7 | 2.7 in 3.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7 | 2.7 in 3.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.7 in 2.7 | 2.7 in 3.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.7 in 2.7 | 2.7 in 3.7

Gamma Ray (ECGR) HGNS-H
0 gAPI 150

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Absent 0.500 1.500 2.500 3.500 4.500 5.500 6.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9

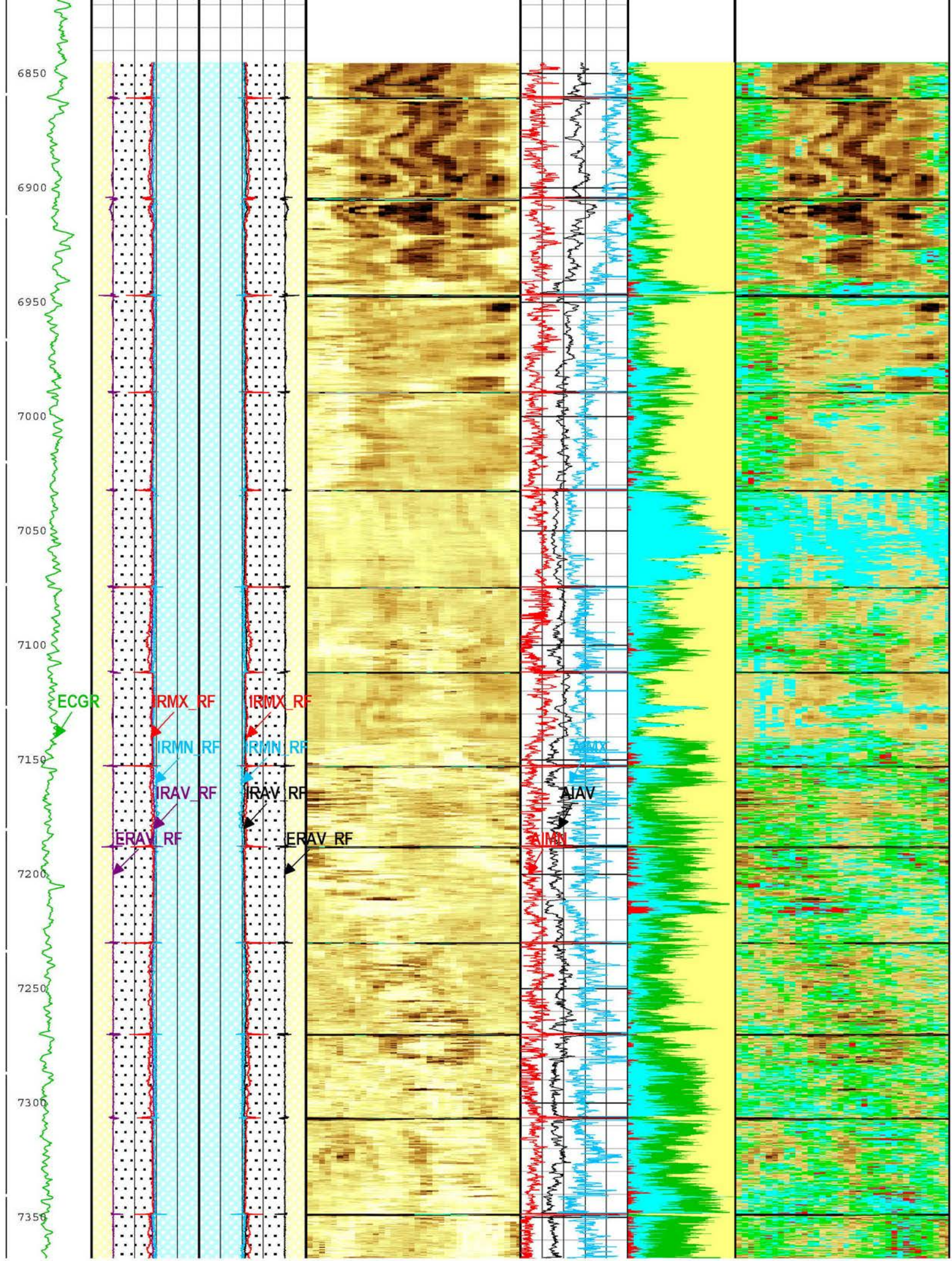
Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9

Bonded
Gas
Liquid
Micro-debonding

Absent -500.000 2.599 3.581 4.563 5.545 6.527 7.509
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)

6800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7000
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ERAV_RF
IRMX_RF
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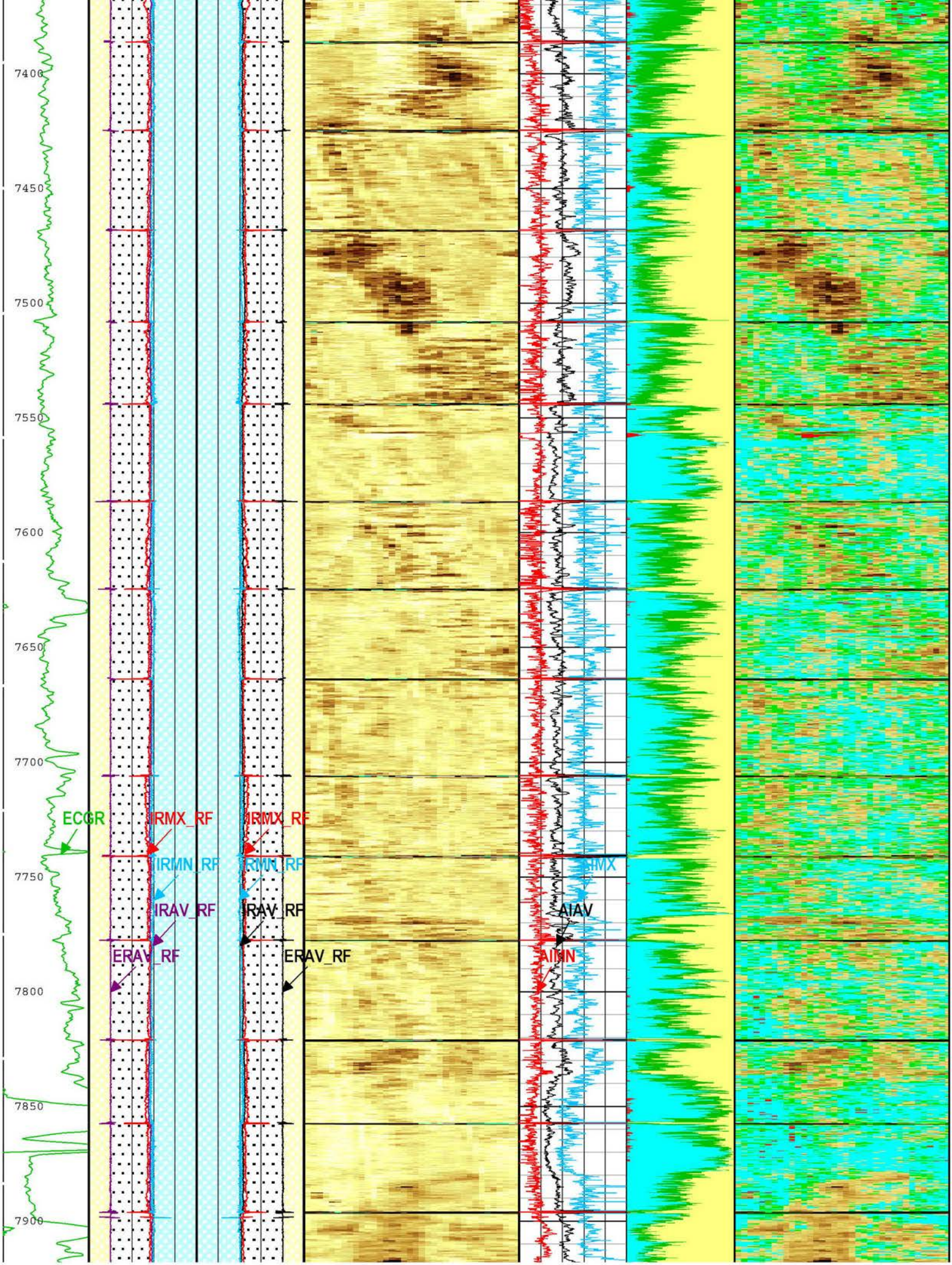
IRAV_RF
ERAV_RF
AIAV
AIMN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7850
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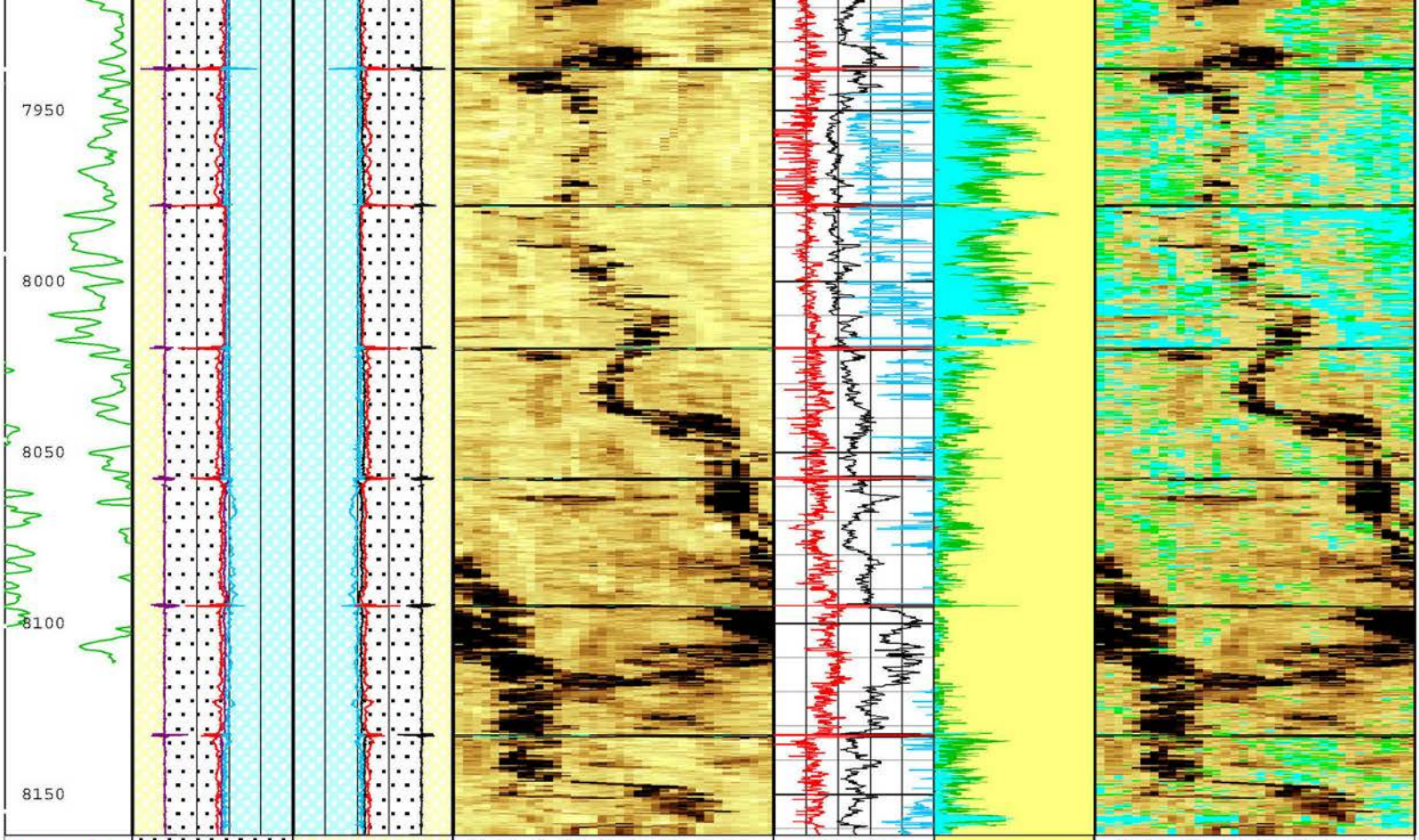
AIAV
AIMN



Gamma Ray (ECGR) HGNS-H
0 gAPI 150

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

ERAV_IRAV | ERAV_RHF1

IRAV_LHF1 | IRAV_ERAV

LHF1_ERAV | RHF1_IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.7 in 2.7

Median of Unflagged External Radii (ERAV_RF) USIT-E
2.7 in 3.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.7 in 3.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.7 in 2.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.7 in 3.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.7 in 2.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.7 in 3.7

Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Oct-2016 14:28:43

Composite 1

Corrosion 5 in = 100 ft

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Two	Log[9]:Up	Up	6640.29 ft	8171.85 ft	20-Oct-2016 9:51:39 AM	20-Oct-2016 10:20:40 AM	ON	1.47 ft	No
Two	Log[11]:Up	Up	36.69 ft	6737.51 ft	20-Oct-2016 10:24:53 AM	20-Oct-2016 12:34:00 PM	ON	1.35 ft	No
Two	Log[14]:Up	Up	5.56 ft	155.15 ft	20-Oct-2016 12:53:24 PM	20-Oct-2016 12:58:23 PM	ON	1.96 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Frew 4

Composite 1:S008

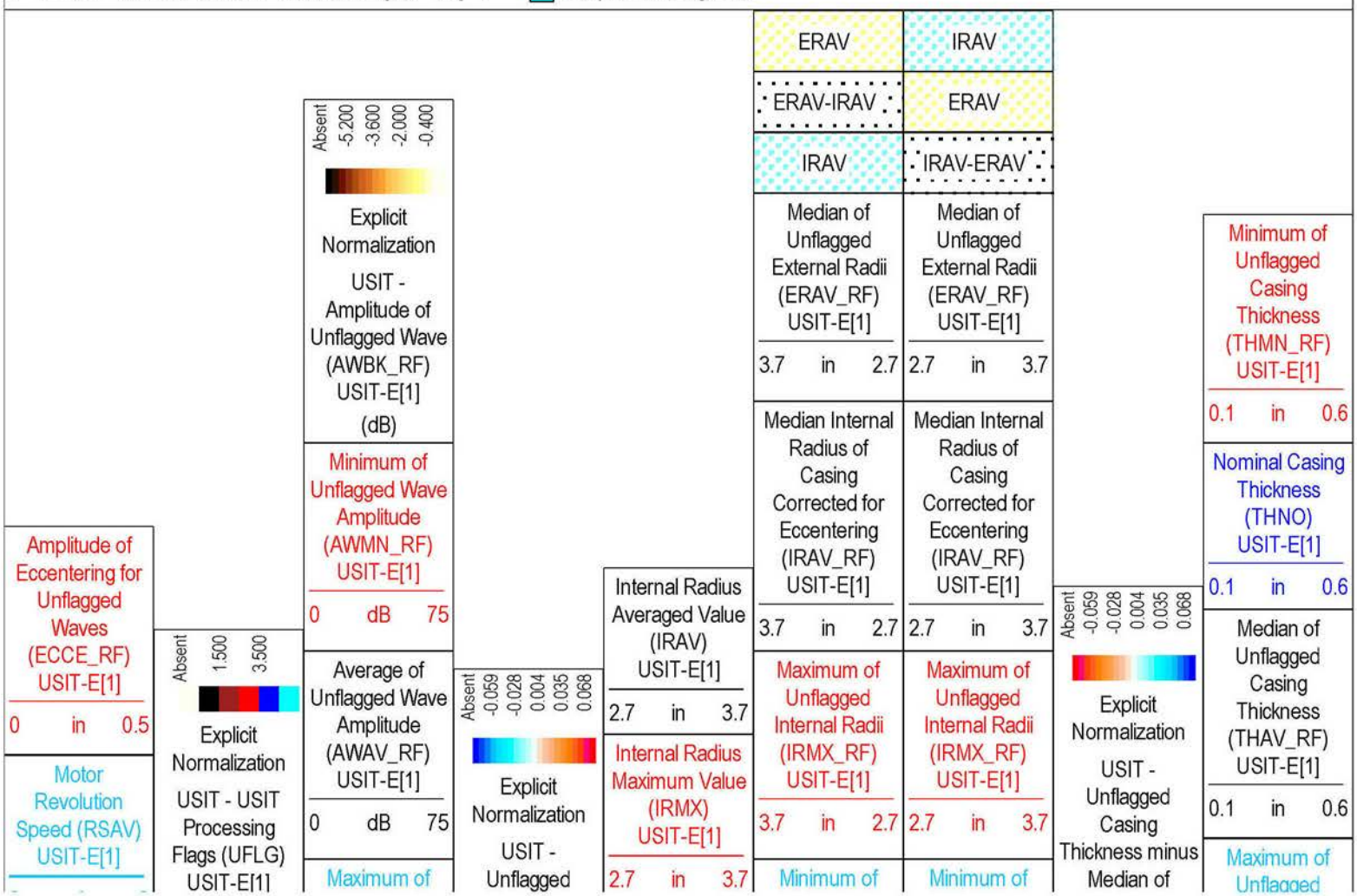
Description: USI Composite Format: Log (LBV1_USI Corrosion 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Oct-2016 14:28:48

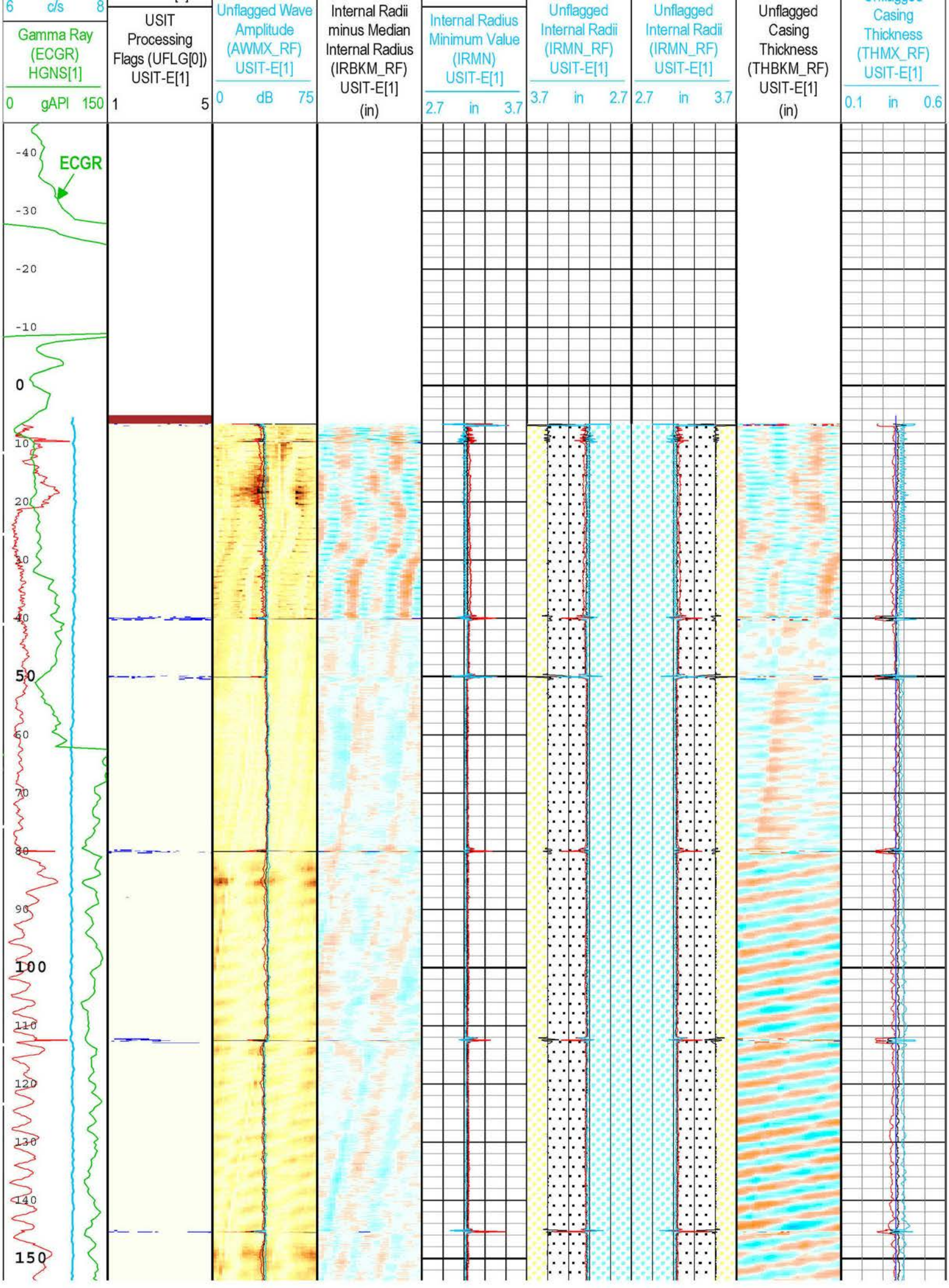
TIME_1900 - Time Marked every 60.00 (s)

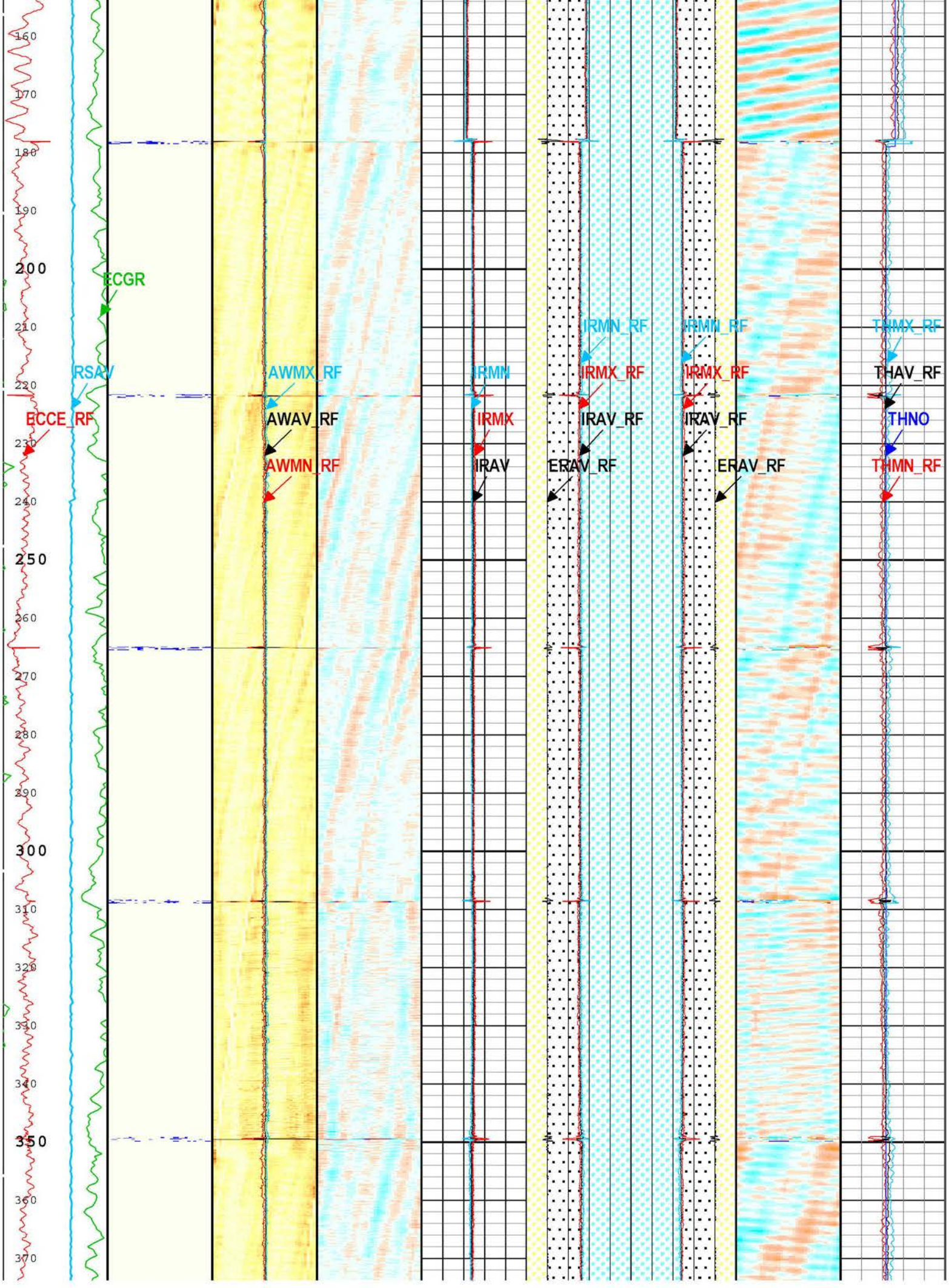
USIT Processing Flags (UFLG[0]) USIT-E[1]

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error




6 c/s 8
Gamma Ray (ECGR) HGNS[1]
0 gAPI 150
ECGR
USIT Processing Flags (UFLG[0]) USIT-E[1]
1 5
Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75
Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1]
(in)
Internal Radius Minimum Value (IRMN) USIT-E[1]
2.7 in 3.7
Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.7 in 2.7
Unflagged Internal Radii (IRMN_RF) USIT-E[1]
2.7 in 3.7
Unflagged Casing Thickness (THBKM_RF) USIT-E[1]
(in)
Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150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360
370
ECGR
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
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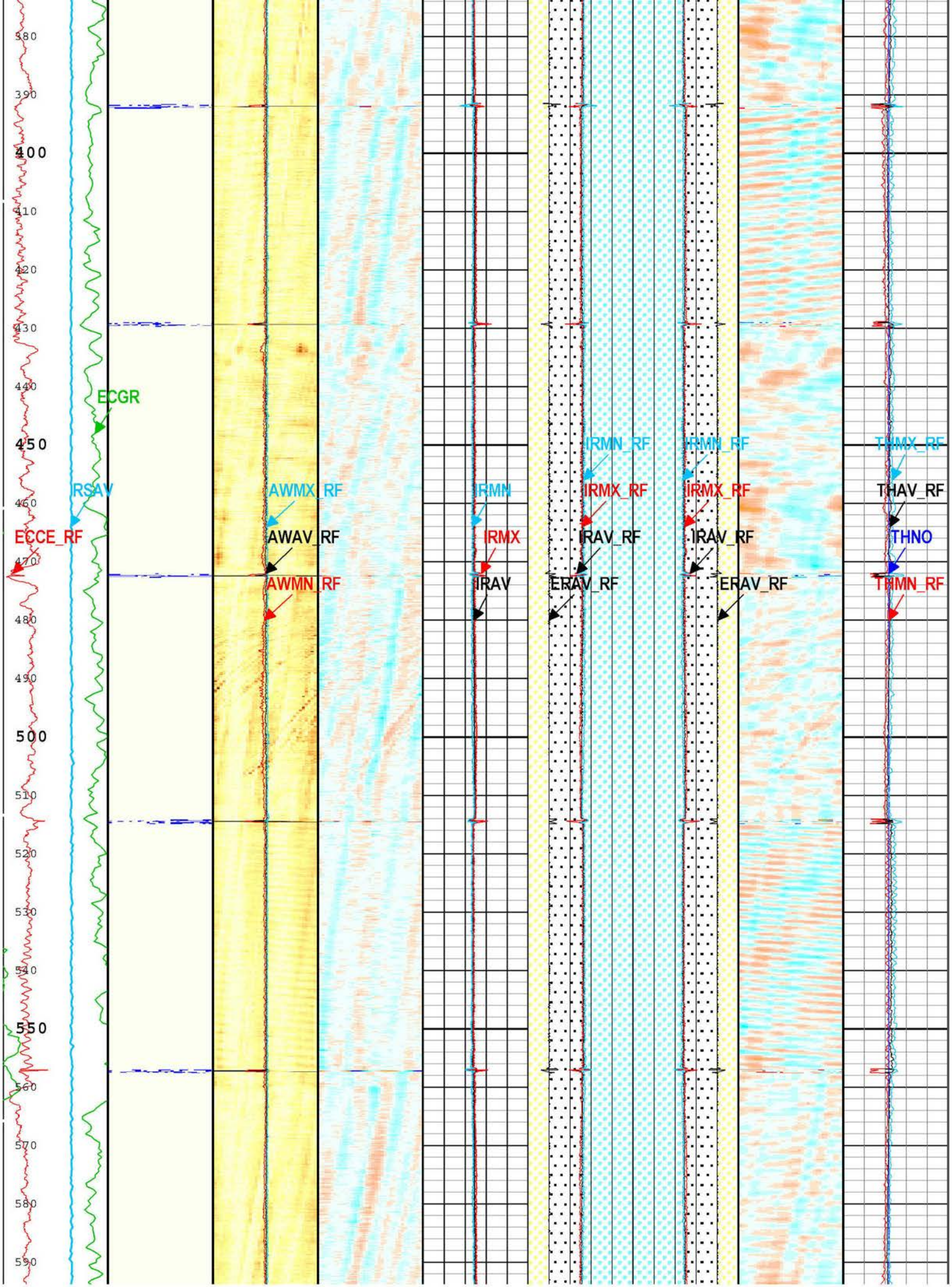
THNO
THMN_RF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ECGR
RSAV
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AWAV_RF
AWMN_RF
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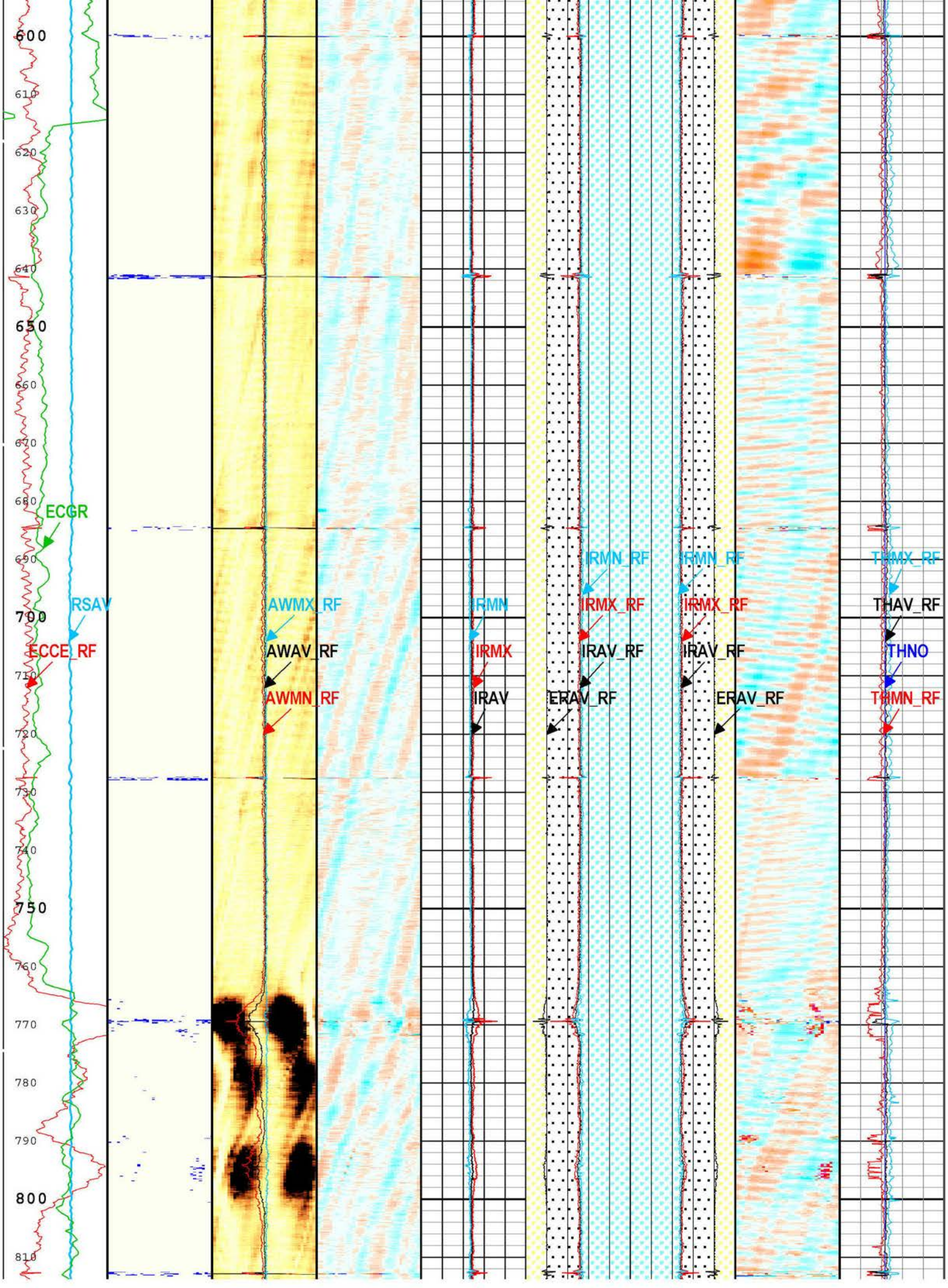
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800
810
ECGR
RSAV
ECCE_RF
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AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
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IRMX_RF
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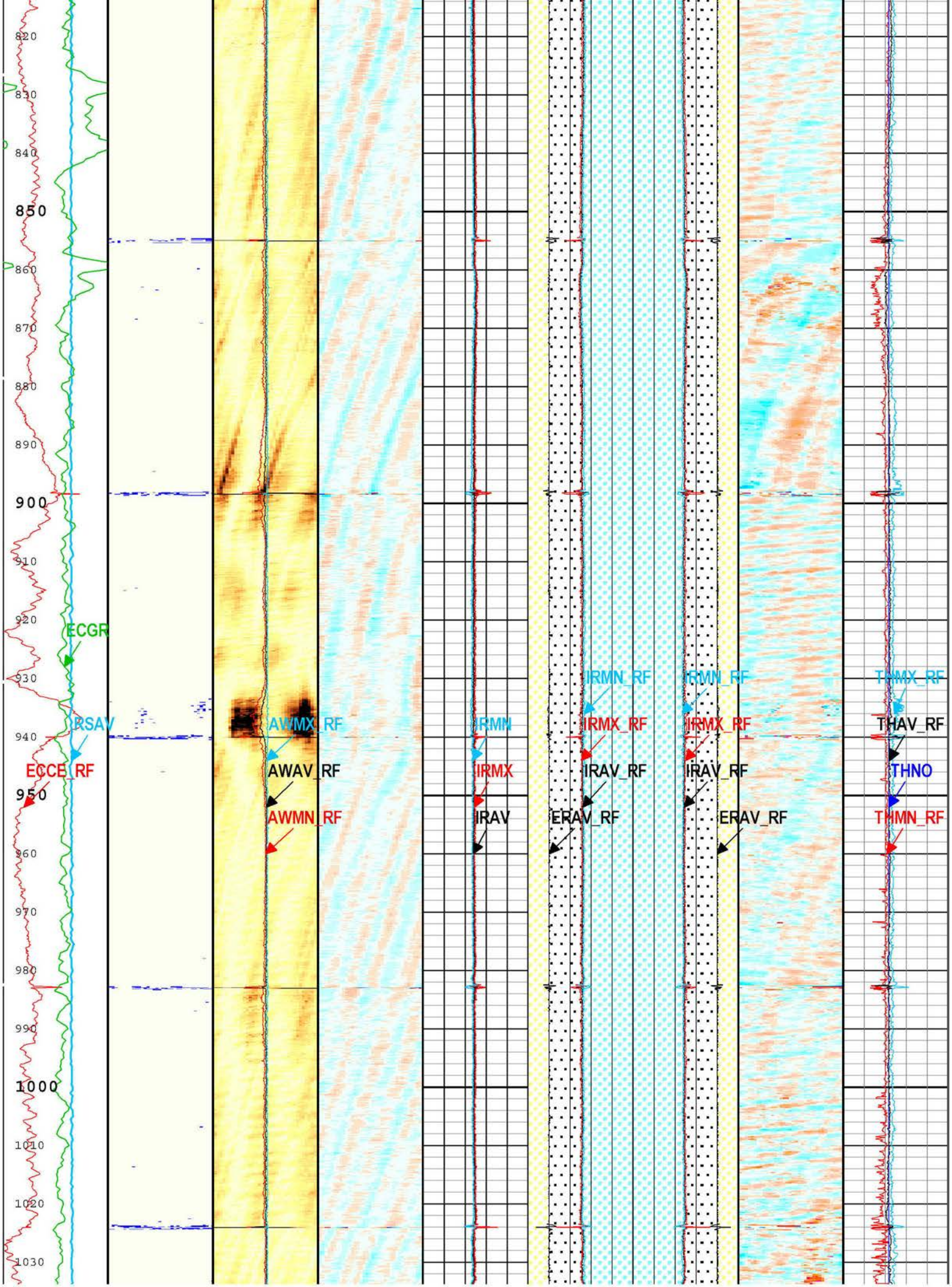
THMN_RF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1010
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RSAV
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AWMX_RF
AWAV_RF
AWMN_RF
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IRAV
IRMN_RF
IRMX_RF
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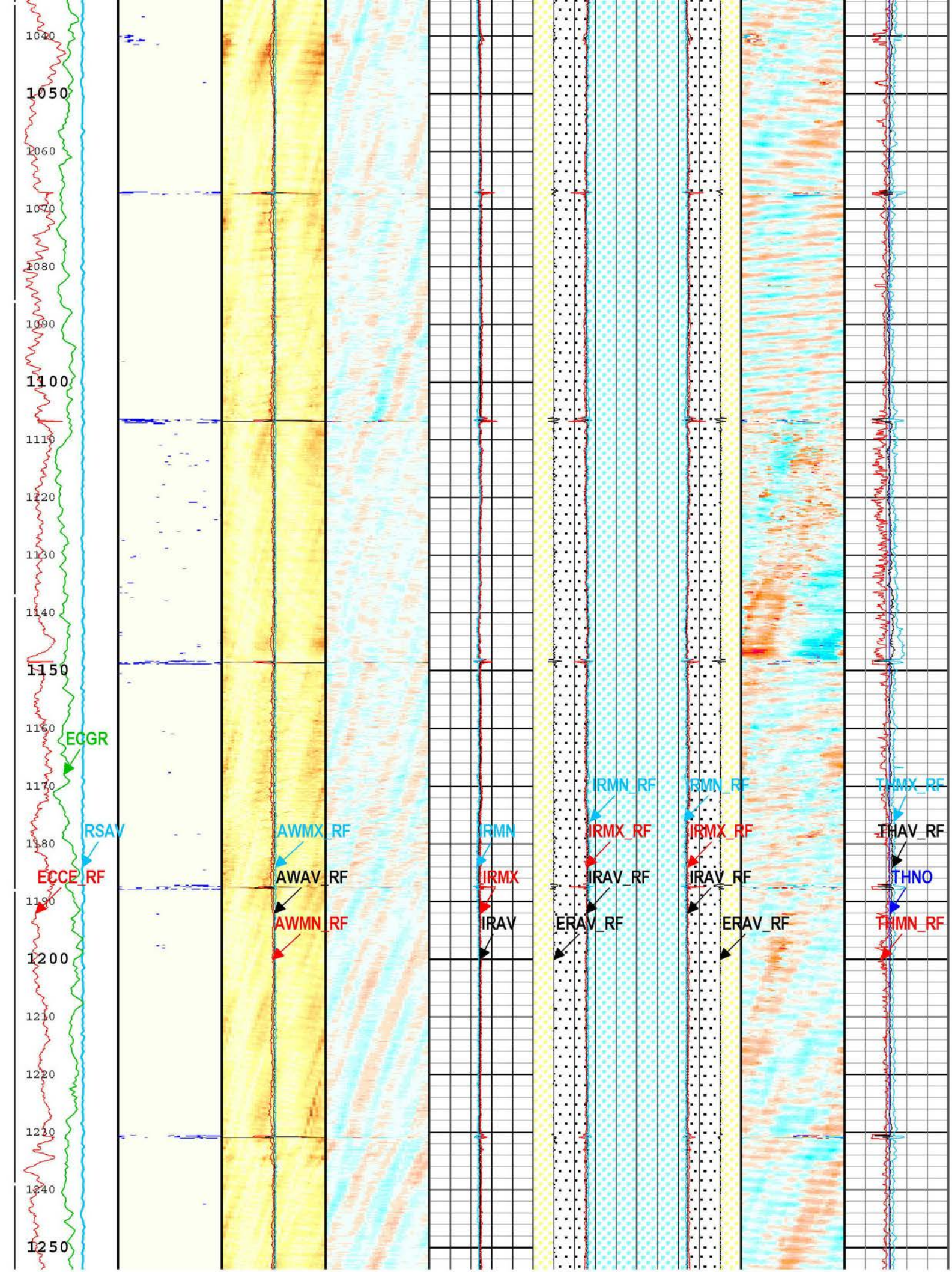
THMN_RF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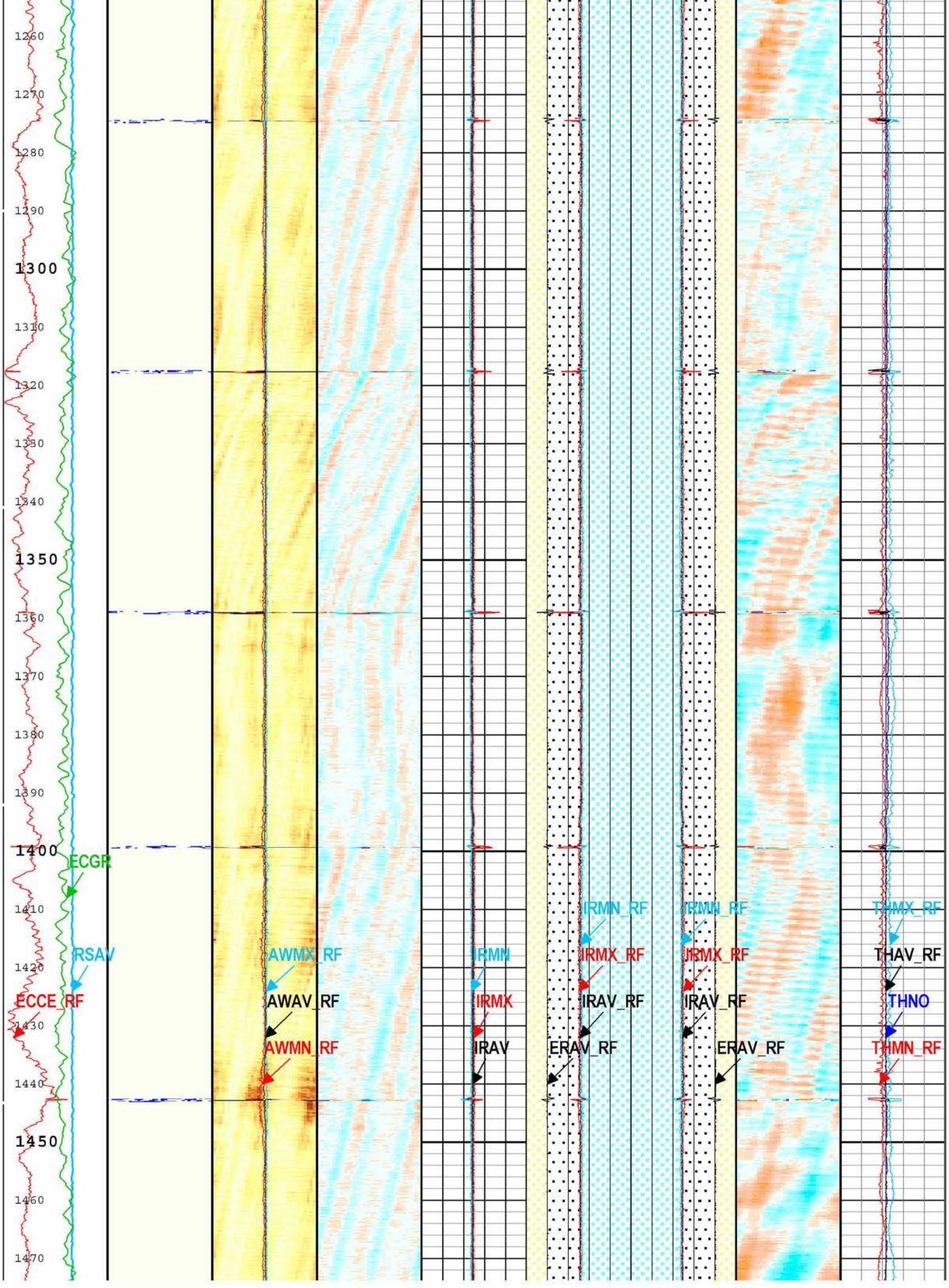
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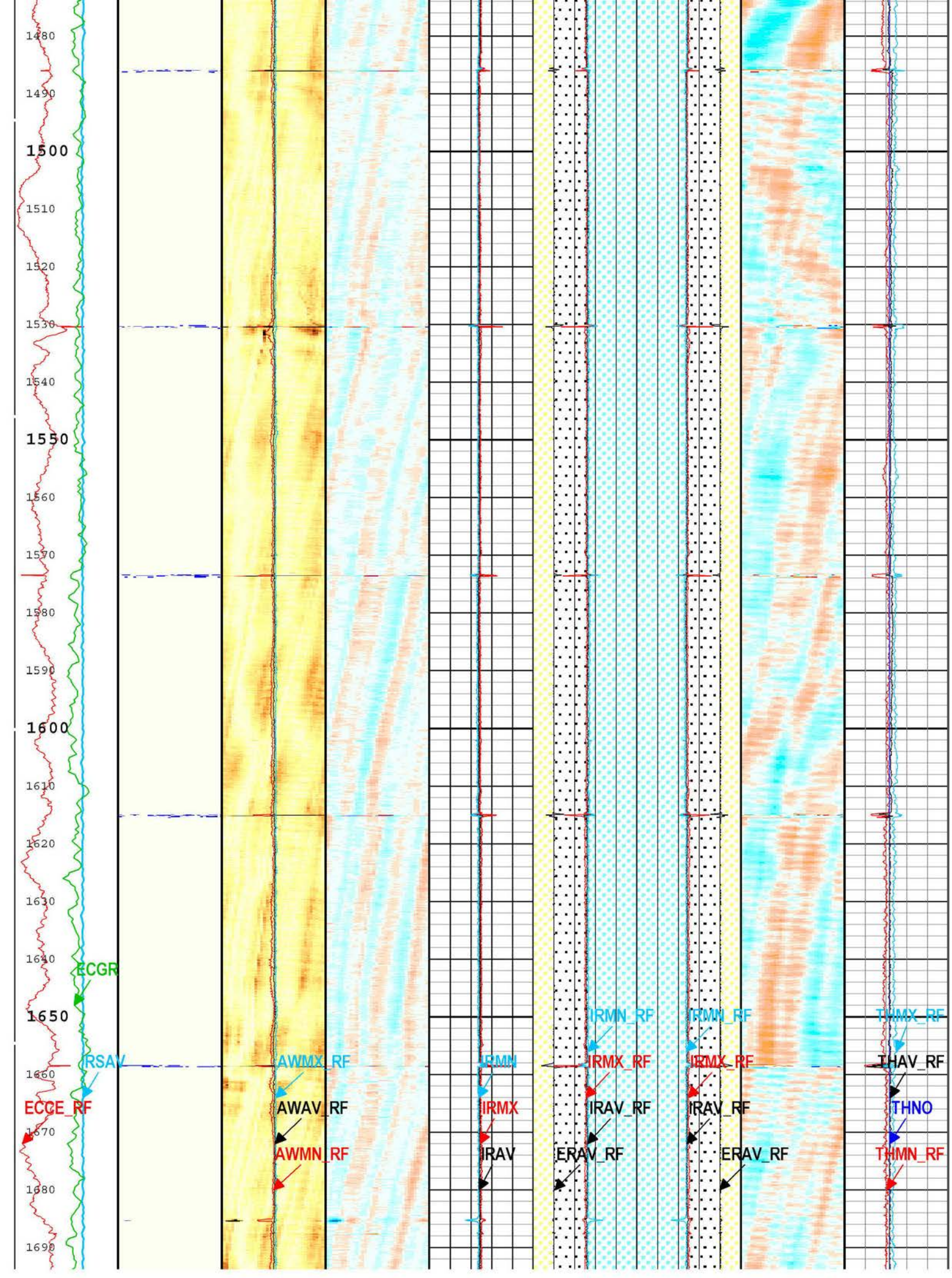
THNO
THMN_RF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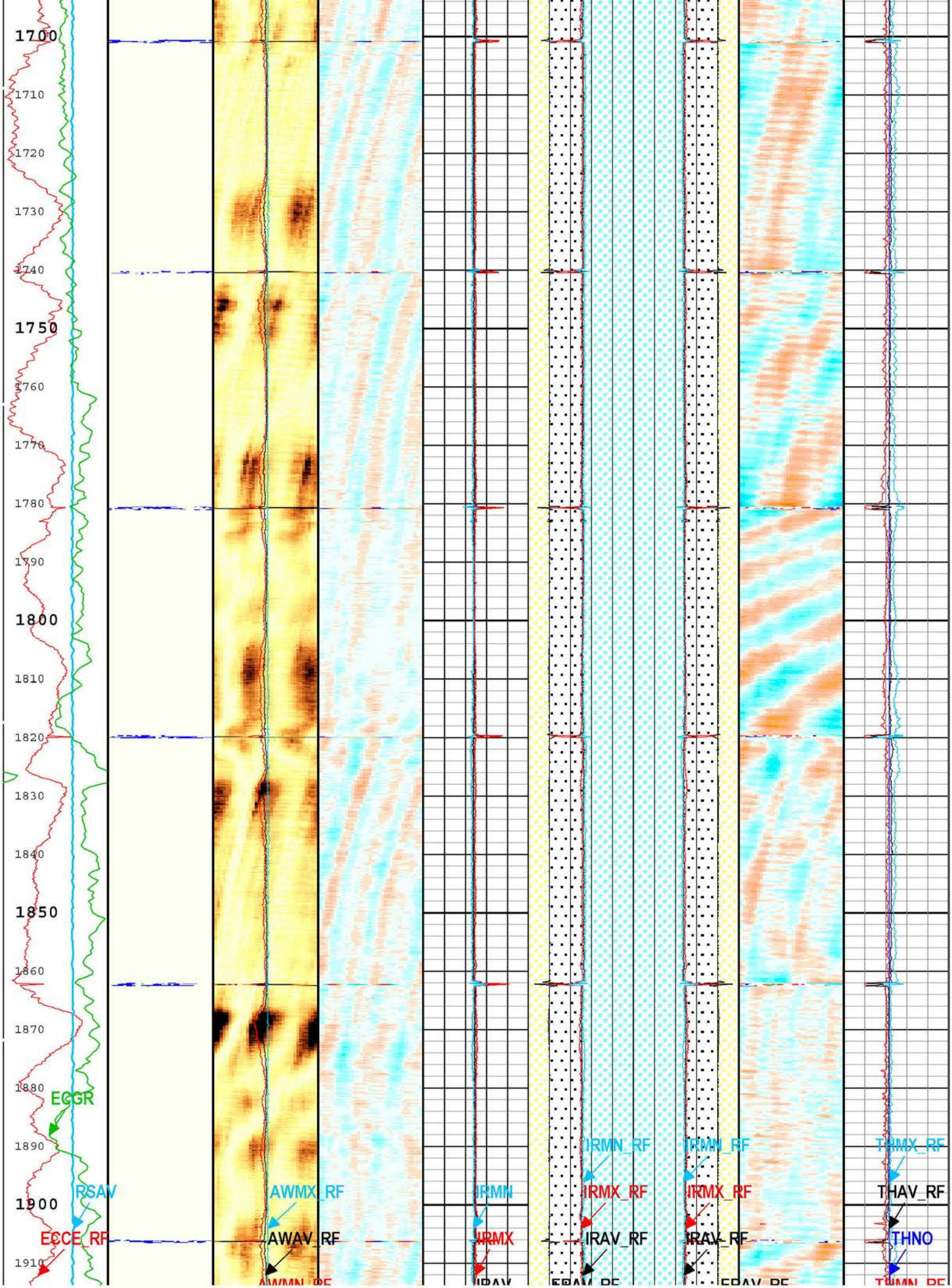
THMN_RF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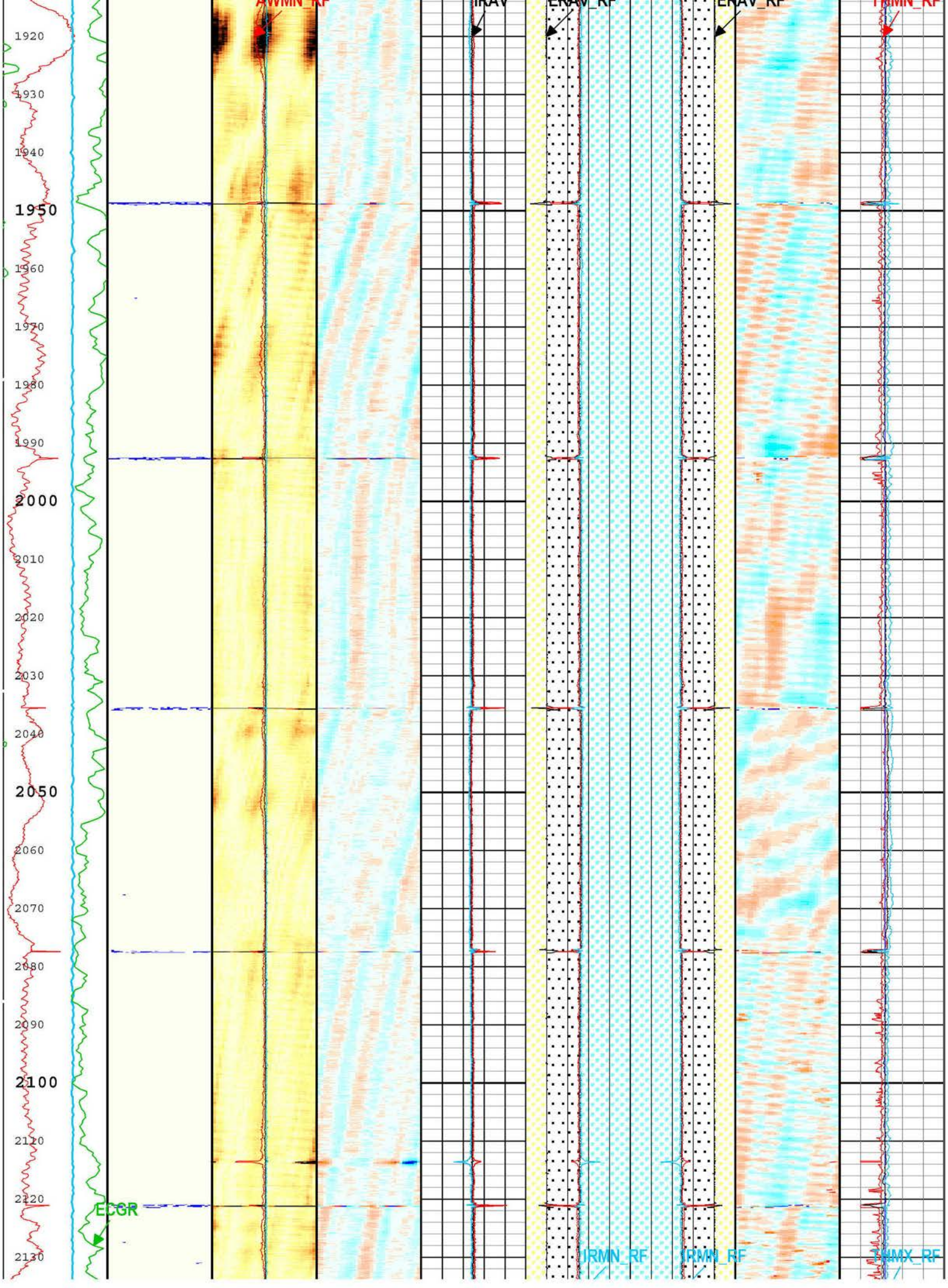
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TRMN_RF
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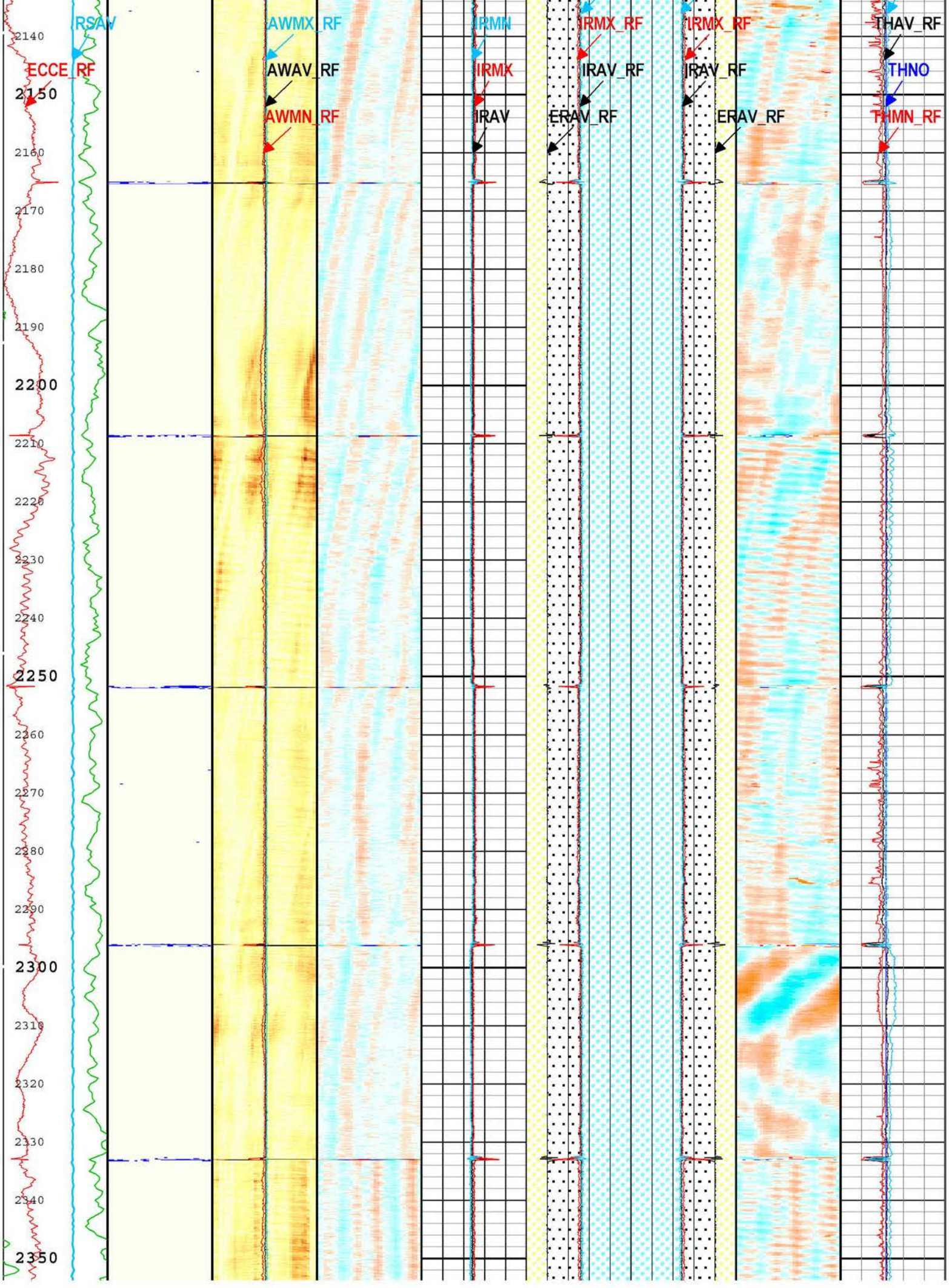
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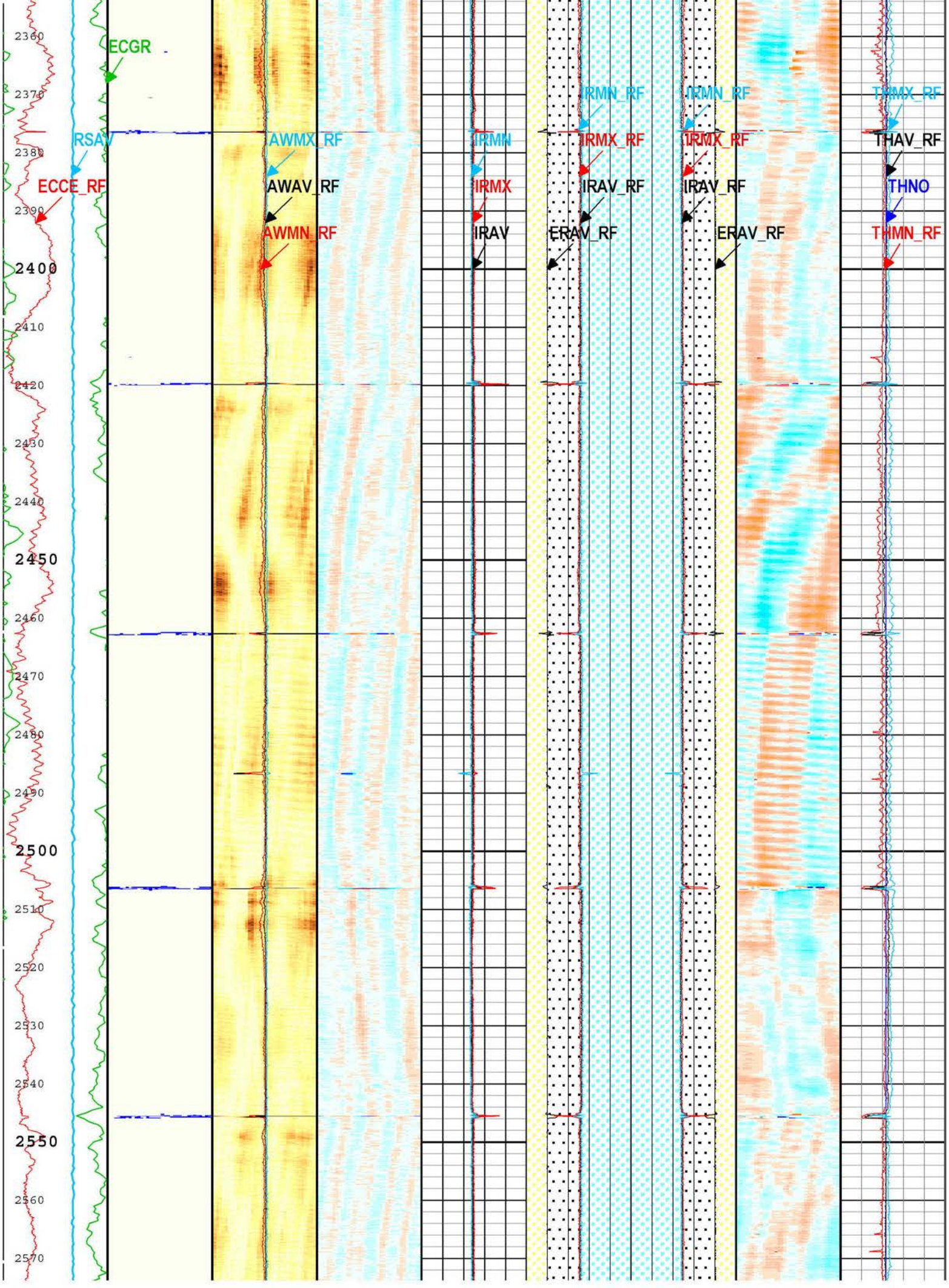
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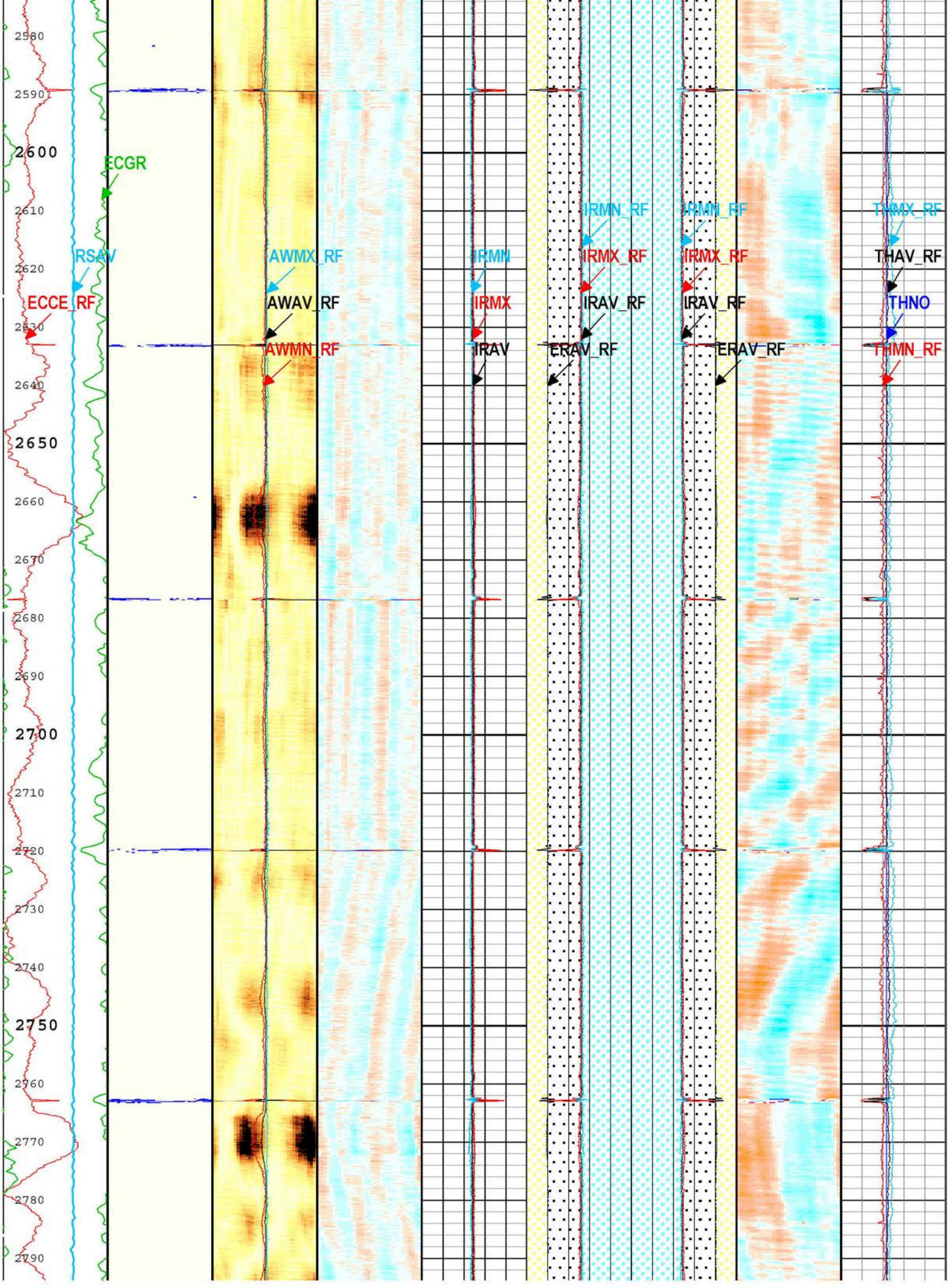
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RSAV
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AWMX_RF
AWAV_RF
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IRMN
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IRAV
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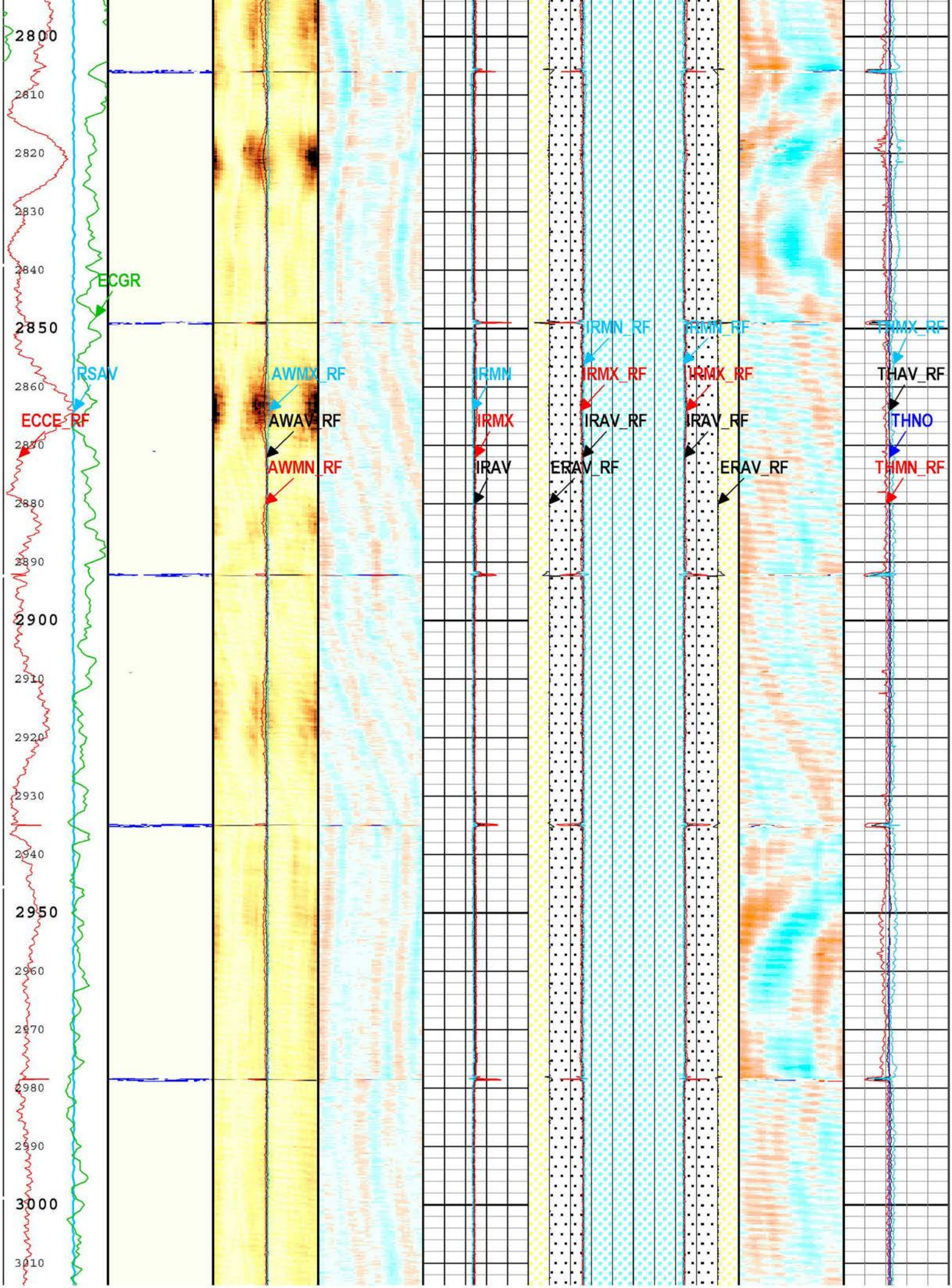
THMN_RF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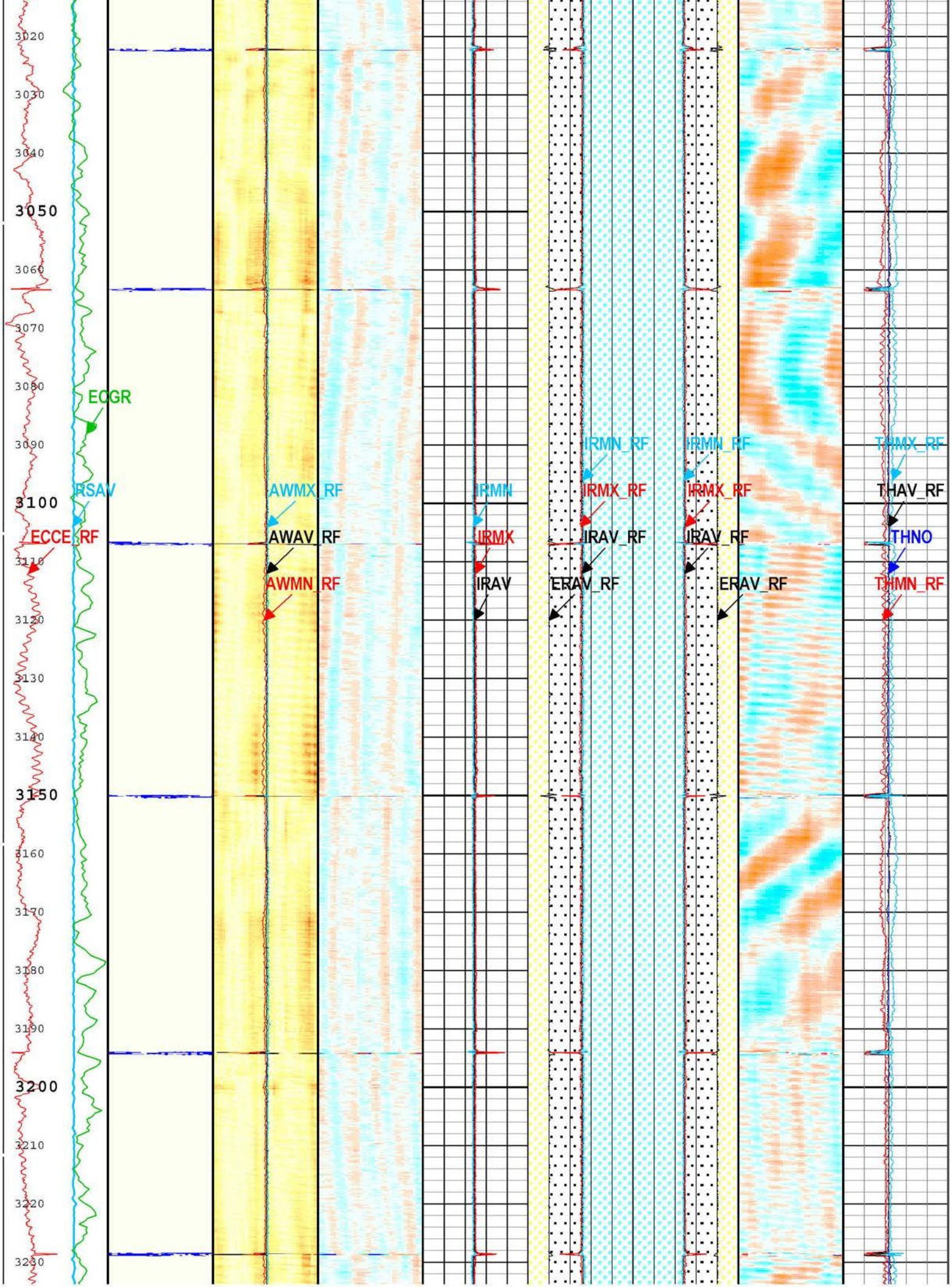
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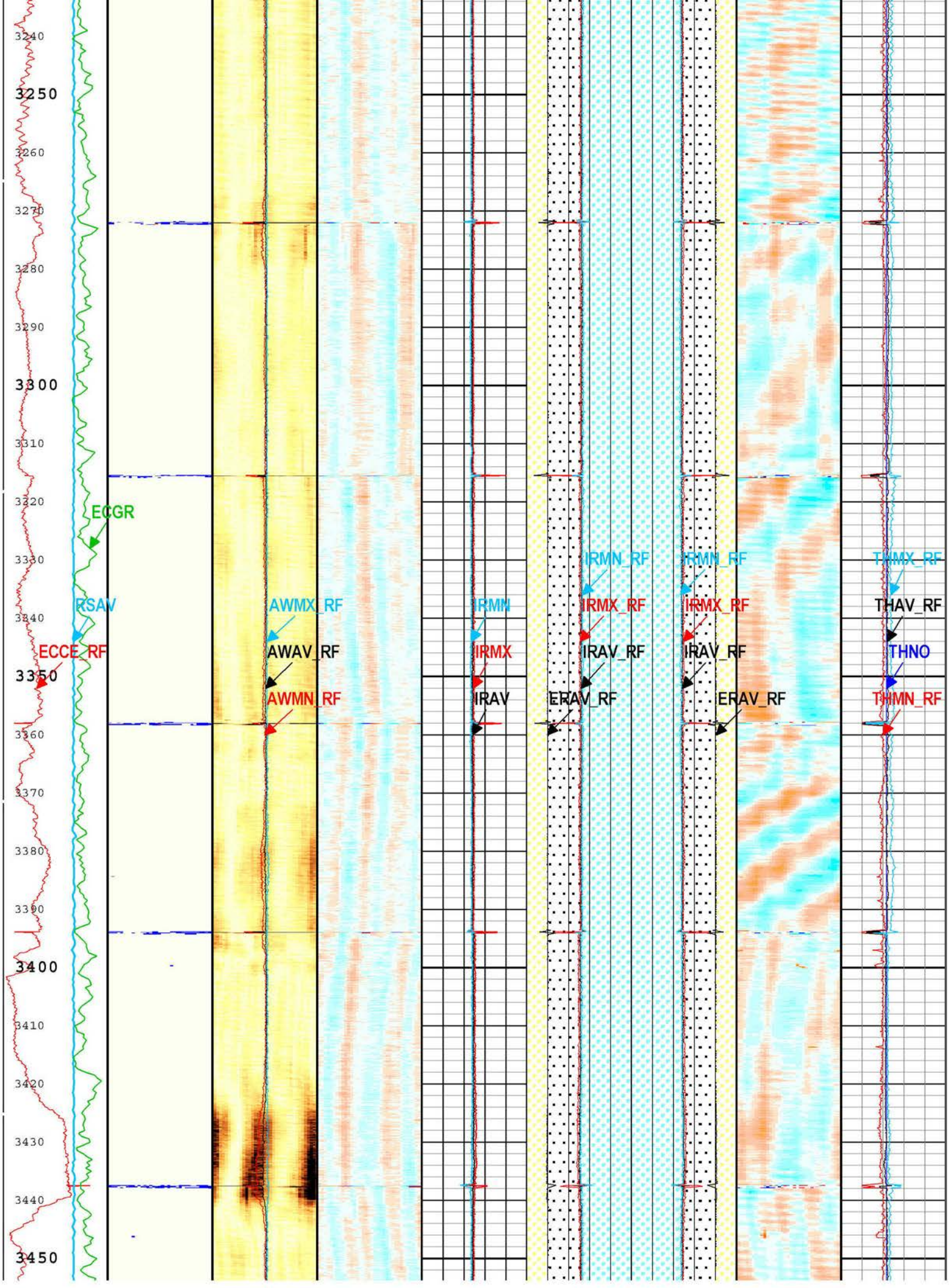
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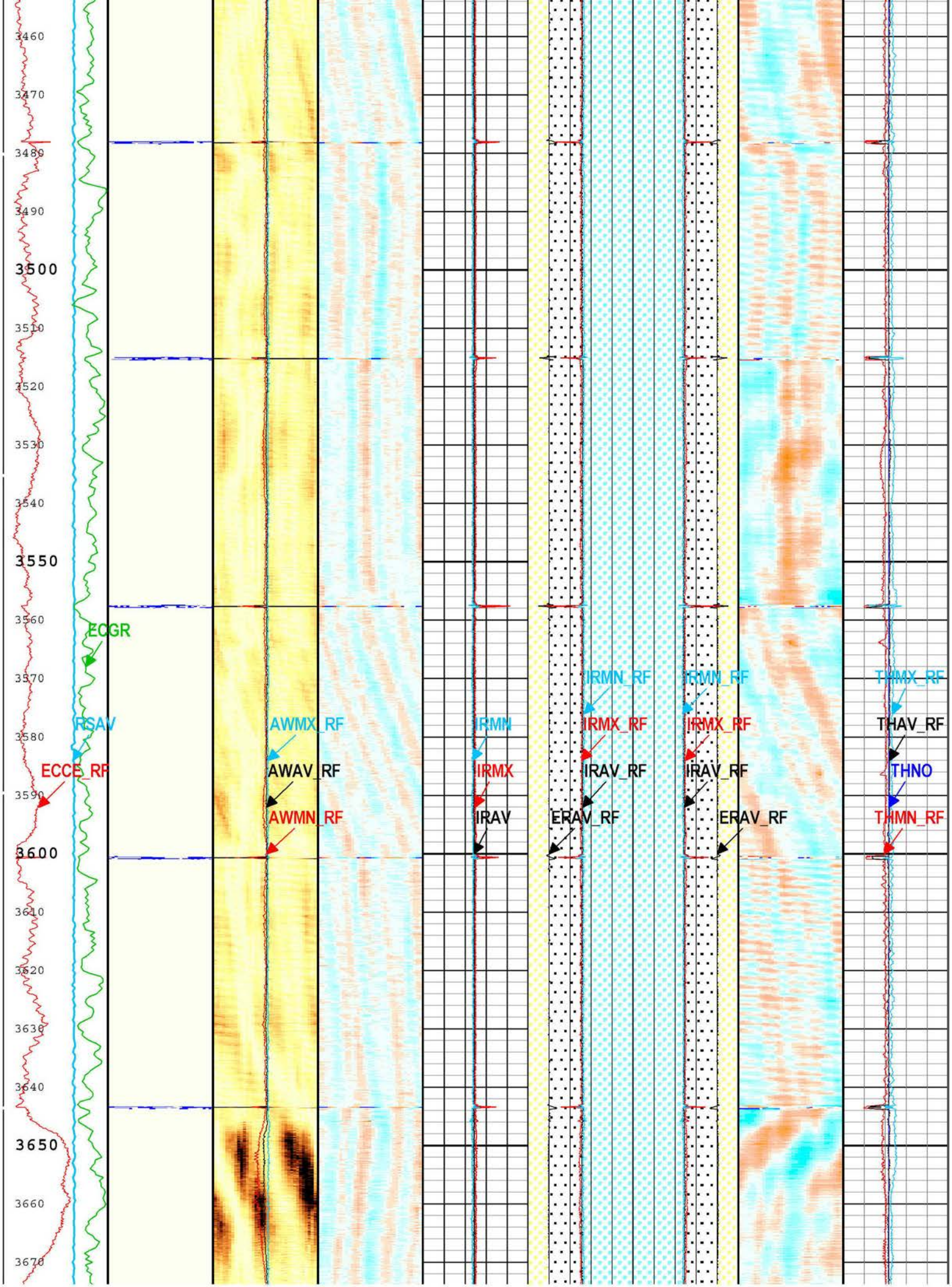
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